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ABSTRACT

Using data bases of the DIALOG system new teaching techniques and materials are presented to an audience of library educators. Included are search demonstrations, teaching approaches, sample exercises and instructional projects, multidatabase searching methods, utilization of search aids and offline resources, the conduct of presearch interviews, information search tactics, and educational program planning. The question, "What level of training do we/should we provide?" served as a major topic of discussion. Distributed to participants at the final session were two position papers: "Proposed Standards for Education in Online Searching in the Professional Library Curriculum," and "On the Relationship between Library Schools, Search Service Vendors, and Database Producers." (RAA)

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ED181935

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NATIONAL INSTITUTE OF EDUCATION

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UNIVERSITY OF WASHINGTON
School of Librarianship

NEW TECHNIQUES IN THE TEACHING OF ONLINE SEARCHING

An Institute For Library Educators
Seattle, Washington, March 20-24, 1978

EXHIBITS AND SUMMARIES OF PRESENTATIONS

edited by

Edmond Mignon

from material prepared by

Pauline Atherton, Charles P. Bourne, Frances G. Spigai

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Edward Mignon

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

August 1978

IR000078

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INTRODUCTION

In March 1978 the University of Washington School of Librarianship conducted an institute for library educators on new techniques in the teaching of online searching, funded by a grant from the United States Office of Education under Title II-B of the Higher Education Act of 1965. The Institute was attended by faculty members specializing in the teaching of online searching from twenty library schools representing all parts of the nation. In an effort to disseminate the work of the Institute to a wider audience, we have prepared several documents for distribution by the ERIC Clearinghouse on Information Resources, one of which is the following selection of materials that were utilized by the staff and participants during the week of the Institute. Most of these materials are of three kinds: 1. Notes on presentations commissioned by the Institute from the teaching staff, 2. Handouts prepared for distribution to the participants, 3. Materials contributed by the participants: some of these represent teaching materials used in their academic programs, while others were generated during the week of the Institute.

The sessions of the Institute were organized in a manner that stressed continuous participant activity, and the teaching staff was encouraged to avoid preparing formal papers for their presentations. Instead, they worked from sketches of varying levels of detail. The summaries and exhibits that follow provide an indication of the range and character of the topics discussed, but they represent working notes rather than formal proceedings, and do not do justice to the care and style of the actual presentations, and should not be interpreted as polished products of their authors.

Funded by a grant from the U.S. Office of Education under Title II-B of the Higher Education Act of 1965, as amended

UNIVERSITY OF WASHINGTON
School of Librarianship

NEW TECHNIQUES IN THE TEACHING OF ONLINE SEARCHING
An Institute for Library Educators
Seattle, Washington, March 20-24, 1978

ACTIVITY SCHEDULE

All events take place in Room 320 of the Odegaard Undergraduate Library, unless otherwise noted.

Easier access to more information is not the point, and no matter that the information may be the best that has been thought and said. Education, in its earlier stages at any rate, is a trial-and-error process supervised by beings, preferably humanid, more experienced and instructed than oneself. As one grows older, other stages of one's own changing self are substituted for the supervisor. Speaking from my own experience, I know that I have learned throughout my life...chiefly through my mistakes and pursuits of false assumptions, not by my exposures to founts of wisdom and knowledge.

-Igor Stravinsky
Themes and Episodes

A NOTE ON THE EVENING SESSIONS

One of the goals of the Institute is to give you the opportunity to explore the procedures and practice the skills that you want to have more experience with. The evening sessions have been planned as free choice periods in which you may use the technological resources of the Institute to try out exercises, work on your searching skills, check out data bases, or do whatever you please. We hope that we have enough terminals to give everyone a generous amount of hands-on practice without having to use sign-up sheets, but if this becomes a problem, please let the Institute Director know right away.

A working collection of equipment descriptions, exercises, workbooks, and search aids will be available in the room for you to use.

The Institute staff will be on hand to discuss, consult, demonstrate, tutor, or help in any way that they can, and you are encouraged to bring your particular concerns to their attention. Or, if you prefer, you may wish to use this time for informal exchanges of ideas and methods with other participants.

Monday, March 20, 1978

8:30	WELCOME Peter Hiatt, Director, School of Librarianship
8:40	INTRODUCTION (Mignon)
9:15	EXECUTIVE SURVEY. How data bases are used. Types of available data bases. (Spigai)
9:45	BREAK
10:00	EXECUTIVE SURVEY. Online search components and practices. (Spigai)
10:50	COMPARATIVE SEARCHING and Cross-System Checking. (Atherton)
12:00	LUNCH
1:15	PARTICIPANT self-introductions
1:45	EXERCISES for comparative searching. (Atherton)
2:30	DISCUSSION and exchange of results and observations (Atherton)
3:20	BREAK
3:30	PARTICIPANT FORUM I: Designing Exercises and Learning Structures.
4:30	RECESS
6:45	STAFF CONFERENCE
7:00	CONCURRENT WORKING SESSIONS: 1) Hands-on 2) Exploration of ONTAP 3) Individual Counseling
9:00	EXIT

Tuesday, March 21, 1978

8:30	EYEOPENER. Discussion and reactions to Monday evening experiences. (Mignon and Participants)
9:30	TEACHING SEARCH STRATEGIES (Atherton, Bourne, Mignon)
10:30	BREAK
10:50	PARTICIPANT FORUM II: Pedagogical Strategies
12:00	LUNCH
1:15	FUNCTIONAL APPROACH TO DATA BASE DESCRIPTION (Spigai) Exercise A distributed
2:15	SELECTING AND ESTIMATING EQUIPMENT AND RESOURCES (Bourne)
3:15	BREAK
3:25	SELECTING AND ESTIMATING, PART II (Bourne & Participants)
4:30	RECESS
6:45	STAFF CONFERENCE
7:00	CONCURRENT WORKING GROUPS: 1) Exploring ONTAP 2) Other's Exercises 3) Individual Counseling 4) Exercise A handed in
9:00	EXIT

Wednesday, March 22, 1978

8:30	EYEOPENER. Discussion of Exercise A (Spigai) Second stage of Exercise A distributed.
9:30	EVALUATION of exercises. Criteria for assessment (Atherton)
10:00	EVALUATION of exercises and student progress. (Atherton, Bourne, Participants)
10:50	PARTICIPANT FORUM III
11:15	TEACHING PRESEARCH INTERVIEWING (Atherton)
12:00	WORKSHOP in making reference interview videotapes.* (Participants)
2:00	VIEWING AND ANALYZING VIDEOTAPES (Atherton, Participants)
4:00	CONCURRENT WORKING SESSIONS: 1) Exploration of ONTAP 2) Exploration of Exercises 3) Individual Counseling 4) Individual Study of Audio/Video Tapes 5) Second Exercise A handed in
5:30	RECESS
7:00	DINNER at Ivar's Salmon House

* Workshop organized into four half-hour segments. Participants will be scheduled for one of the half-hour periods, and have the remaining time for lunch break.

Thursday, March 24, 1978

8:30	EYEOPENER: ONLINE CATALOGS, and their potential as teaching resources (Demonstration of Washington Library Network by Rick Woods)
9:30	WHAT DEPTH OF TRAINING do/should we provide? (Bourne, Mignon)
10:30	BREAK
10:50	PLANNING AN ONLINE INSTRUCTIONAL PROGRAM (Bourne)
12:00	LUNCH
	POSITION PAPER NO. 1 Standards for education in online literature searching in professional librarianship curriculum.
1:15	DISCUSSION GROUPS
2:45	BREAK
3:00	SNYTHESIS OF FINDINGS.
4:30	RECESS
7:00	IMPACT of online on Print Products. Pedagogical and Administrative Issues (Mignon, Spigai)
7:45	CONCURRENT WORKING GROUPS 1) Exploring ONTAP 2) Exploring Exercises 3) Individual Counseling
9:00	EXIT

Friday, March 25, 1978

8:30	EYEOPENER: Subject vs. Data base vs. System Information. What makes a good search and/or good searchers? (Spigai)
9:15	INFORMATION SEARCH TACTICS (Marcia Bates)
9:45	BREAK
	POSITION PAPER NO. 2 Relationship between library school and data base vendors and producers.
10:00	DISCUSSION GROUPS
11:15	REPORTS OF DISCUSSIONS Synthesis of findings
12:15	INSTITUTE WRAP UP AND CONCLUDING REMARKS
12:30	END-OF-INSTITUTE EVALUATION (Meadow, Participants)
1:15	INFORMAL UNSCHEDULED ACTIVITIES
2:30	EXIT

1. SEARCH DEMONSTRATIONS

Adapted from material prepared by Frances G. Spigai

Four contrasting searches, illustrating the types of available databases were presented.

1. Standard bibliographic across several databases. Couple with citation search on same topic.

2. Information-popular/public. Two public library reference questions answered via i) Magazine Index and ii) Foundation Grants.

3. Information-industrial marketing/research. Search on a statistical database for information. Sort it according to needs of user. Print out select portions according to sort.

4. Bibliometrics. Intersections of subjects to show how tallies of Boolean results can quickly give distributions of subjects by time period, language, journal, etc.

The searches had been prepared in advance and stored on audiotape. When the audiotape recorder was connected to a telephone handset, the handset transmitted the sounds to a modem just as if it were working from a telephone signal from the search service's computer. The output was in turn relayed to video monitors and an Advent screen for convenient viewing from all parts of the classroom.

This summary only reproduces selected citations, as samples of representative system response to the searches. At the Institute presentation, the output listings were more substantial, and the cost figures are for the output of all listed citations.

PRELIMINARIES

Review of online search components and practices:

Databases available
(typology, structure, access points, inter-relationships, user services, documentation, promotion)

Online services available
(database access, telecommunication options, pricing, user services, search aids, educational materials, opportunities for training)

Current trends in uses and administration of online service
(pricing and promotion policies, online user groups, uses made by type of library, advantages and disadvantages of online service, staff requirements)

The near future
(databases, services, technology and terminal, users, training)

BRIEF DESCRIPTION OF SAMPLE SEARCHES

Search Set #1. Standard bibliographic search coupled with citation search. A biochemist is preparing a position paper on the potential hazards of research on recombinant DNA for a chapter meeting of the American Chemical Society. He wants a bibliography of the most recent publications on the issue as well as all those citing a classic paper by Paul Berg of the National Academy of Science. This paper appeared in Science (v. 185, pp. 303+) and in the Proceedings of the National Acedemy of Science (v. 71, pp. 2593+).

TERMS AND POSTINGS

Databases Searched	GENETIC (W) ENGINEERING (Set 1)	RECOMBINANT (W)DNA (Set 2)	HAZARD? (Set 3)	BIOHAZARD? (Set 4)	(1or2) AND (3or4)	Cost (DIALOG ar TYMNET + offline prints in full forma
BIOSIS '72-present	217	36	1727	0	12	$3.43*
CA COND/CASIA						
'77-present	25	35	1798	1	7	$2.56
'72-'76	30	12	3412	10	4	$3.18
'70-'71 (CASIA)	0	1	393	0	0	$0.56
SCISEARCH '74- '77	50	115	1576	25	13	$2.39
SOCIAL SCI-SEARCH '72-'77	22	26	443	3	1	$6.32
	CITATION SEARCH ON BERG, P				12	
SCISEARCH	" " " " "				41	$7.30

*SEARCH-SAVE established in this file

Search ≃ $26: $2, TYMNET;
$14 DIALOG Connect-time;
$10 for 90 prints from 5 files

Sample Output:

```
FILE4CA CONDENS/CASIA 77-VOL88(08)
     (COPR. AM. CHEM. SOC.)
          SET ITEMS DESCRIPTION (+=OR;#=AND;-=NOT)
          --- ----- -----------------------------
? .EXECUTE1D13
                    25 GENETIC(W)ENGINEERING
                    35 RECOMBINANT(W)DNA
                  1798 HAZARD?
                     1 BIOHAZARD?
                     7 (1OR2)AND(3OR4)
            1        7 SERIAL# 1D13
? T1/6/1-3
1/6/1
2A0880704677OW      FUEL: 77     PAGES: 2L0 PP.
  BIOHAZARD (DISCUSSION OF RECOMBINANT DNA)

1/6/2
CA0880503661?N      JOURNAL:   CHEMISTRY     FUEL:    77     SERIES:  50
ISSUE: 10    PAGES: 13-17
  RECOMBINANT DNA - THE CONTAINMENT DEBATE

 1/6/3
CA0880100177?M      JOURNAL:   MILES INT.   SYMP.   SER.      FUBL:  77
SERIES: 10    ISSUE: RECOMB. MOL.: IMPACT SCI. SOC.  /  PAGES: 485-94
  THE LEAST HAZARDOUS COURSE: RECOMBINANT DNA TECHNOLOGY AS AN OPTION
FOR HUMAN GENETIC, VIRAL, AND CANCER THERAPY

? PR1/5
PRINTED1/5/1-7
? B3
          4MAR78 11:10:30 USER312
  $1.22   0.027 HRS FILE4 6 DESCRIPTORS
  $0.22   TYMNET
  $1.12   7 PRINTS
  $2.56   ESTIMATED TOTAL COST
```

```
File7:SOCIAL SCISEARCH 72-(WK52)77
      (Copr. I.S.I. Inc.)
        Set Items Description (+=OR;*=AND;-=NOT)
        --- ----- ----------------------------

? .EXECUTE1D13
                  22 GENETIC(W)ENGINEERING
                  26 RECOMBINANT(W)DNA
                 443 HAZARD?
                   3 BIOHAZARD?
                   1  (1OR2)AND(3OR4)
          1        1 SERIAL# 1D13
? T1
1/2/1
621929  ARTICLE  OATS ORDER#: BM155  6 REFS
   GENETIC ENGINEERING - HAZARD OR BLESSING  (EN)
   MCDOUGALL KJ
   INTELLECT, V104, N2374, P528-530, 1976
   UNIV DAYTON/DAYTON//OH/45409

? PR1
Printed1/2/1
? ECR=BERG P, 1974,
                                  Type Items RT
Ref   Index-term
E1    CR=BERG P, 1963, V385,
        P9--------------------      1
E2   -CR=BERG P, 1974,--------
E3    CR=BERG P, 1974, V185,
        P303-----------------       6
E4    CR=BERG P, 1974, V71
        P2593-----------------      2
E5    CR=BERG P, 1975, V188,
        P991------------------      5
E6    CR=BERG P, 1975, V225,
        P442------------------      1
E7    CR=BERG P, 1975, V72,
        P1981-----------------      2
E8    CR=BERG PA, 1969, V50,
        P200------------------
? SE3,E4,E5
          2    12 E3,E4,E5
                  E2: CR=BERG P, 1974,
```

```
? T2/6/1-2
2/6/1
738441  ARTICLE  OATS ORDER#: DG739  5 REFS
  RECOMBINANT DNA - FACT AND FICTION  (EN)

2/6/2
719445  ARTICLE  OATS ORDER#: CZ985  5 REFS
  SUMMARY  OF  NATIONAL  INSTITUTES  OF  HEALTH  (USA)  GUIDELINES FOR
RECOMBINANT DNA RESEARCH  (EN)

? PR2/5
PRINTED2/5/1-12
? T2/5/2
2/5/2
719445  ARTICLE  OATS ORDER#: CZ985  5 REFS
  SUMMARY  OF  NATIONAL  INSTITUTES  OF  HEALTH  (USA)  GUIDELINES FOR
RECOMBINANT DNA RESEARCH (EN)
  SINGER MF
  NCI,BIOCHEM LAB/BETHESDA//MD/20014
  GENE, V1, N2, P123-139, 1977

  BERG P (SCIENCE, V186, P991, 1975)
  BERG P (NATURE, V225, P442, 1975)
  BERG P (P NATIONAL ACADEMY S, V72, P1981, 1975)
  ENQUIST L (NATURE, V259, P596, 1976)
   (REPORT WORKING PARTY, 1976)
```

Search Set #2. Popular Information

I. How many grants have been given by private foundations to organizations in the State of Washington for projects on the subject of aging during the past four years?

Database: FOUNDATION GRANTS

Estimated Online Cost: $4.01

Set	Input	Postings	Comments
1	RS=WA	445	Recipient State=Washington
2	CC=7.4	799	7.4 is Category Code for Aged.
3	YA=74,75,76,77	42095	Announcement years combined by selecting from system display for EYA=74.
4	C1-3/AND	4	

Type the resulting four records online.

Sample Output:

4/2/1
1911705
SEATTLE FOUNDATION; WA
$15,000 TO COLUMBIA LUTHERAN HOME, SEATTLE, WA. TOWARD CONSTRUCTION OF NURSING HOME FOR THE ELDERLY. 9/21/77
KEY WORDS: AGED, NURSING HOME/NURSING HOME, AGED

II. Ready reference information, using MAGAZINE INDEX data base.

II a. Find an article about Pele, the soccer player, which contains a picture.

SELECT PELE (C) SF=PORTRAIT (4 references retrieved)
Type them out online

SAMPLE OUTPUT:

```
1/2/1
1016005
  THE LAST GOODBYE. (PELE'S RETIREMENT).
  SOCCER  V4  P20(4)  NOV 1977
  PORTRAIT
  ARTICLE TYPE: BIOGRAPHY
  NAMED PERSON: PELE;
  DESCRIPTIORS: SOCCER PLAYERS-UNITED STATES
```

II b. Find a bad review of the movie Valentino.

Set	Input	Postings
2	S VALENTINO	12
3	S GR=F?	88
4	C 2 AND 3	4

Sample Output:

```
4/2/1
1019667
  VALENTINO. (REVIEWS).
  LOS ANGELES  V22  P244(2)  NOV 1977
  ARTICLE TYPE: REVIEW  GRADE: F
  NAMED PERSON: RUSSELL, KEN
  DESCRIPTORS: MOVING-PICTURE PLAYS-REVIELS; ETC.
```

Estimated online cost for II a and II b: $2.50

Search Set #3. Directory/Statistical Information

Who are the top 10 producers of electronic computing equipment in the state of California (either branch sites or headquarters)? List them by share of market, from highest to lowest for all the information available.

Database: EIS PLANTS

Estimated online cost: $12.64

```
? SELECT ELECTRONIC COMPUTING EQUIP?
          1   379 ELECTRONIC COMPUTING EQUIP?
? SELECT BS=CALIFORNIA
          2  8614 BS=CALIFORNIA
? SELECT HS=CA
          3  8311 HS=CA
? COMBINE 1AND(2OR3)
          4    91 1AND(2OR3)
? .SORT4/1-91/SM,D
          5    91 4/1-91/SM,D
? TYPE 5/5/1-10
```

Sample Output:

```
5/5/2
213769
  MEMOREX CORP
    SAN TOMAS & CENTRAL EXPWY
    SANTA CLARA, CALIFORNIA   95052
    COUNTY :  SANTA CLARA  1906085
    408-987-1000

    3573    ELECTRONIC COMPUTING EQUIPMENT

    SALES  MIL $ :    155.2       INDUSTRY % :      1.30
    EMPLOYMENT :    8  (2500-9999)

  MEMOREX CORP              #  03808
    P O BOX 557
    SANTA CLARA, CA   95052
```

Search Set #4. Bibliometrics

Select five institutions represented by Institute attendees and compare the number of publications they have produced on the general subject of search strategies as it relates to libraries.

First expand SEARCH STRATEGIES to view that term and related terms. Select relevant terms. Cross SEARCH STRATEGIES term with LIBRAR?

Combine each institution with the subject area. Type out all the ERIC report numbers. List the citation for the latest document from Syracuse.

Database: ERIC
Estimated online cost: $3.07

```
? EXPAND (SEARCH STRATEGIES)
Ref   Index-term                Type Items RT
R1    SEARCH STRATEGIES-------     387 10
R2    SEARCH THEORIES---------U      1
R3    INFORMATION RETRIEVAL---B   2034 22
R4    BIBLIOGRAPHIC COUPLING--R     29 11
R5    CLASSIFICATION----------R   4113 25
R6    INDEXING----------------R   1081 17
R7    INFORMATION SEEKING-----R    436 12
R8    INFORMATION STORAGE-----R    908 26
R9    LIBRARY SCIENCE---------R    585 20
R10   OPERATIONS RESEARCH-----R    423 16
R11   RELEVANCE (INFORMATION
        RETRIEVAL)------------R    227 11
? SELECT R1,R3-R8,R11
          1   7383 R1,R3-R8,R11
                   R1: SEARCH STRATEGIES
? SELECT LIBRAR?
          2 13390 LIBRAR?
? COMBINE 1AND2
          3   1496  1AND2
? SELECT STATE(W)UNIV(F)ALBANY/CS
          4    302 STATE(W)UNIV(F)ALBANY/CS
? SFLORIDA(W)STATE(F)TALLAHASSEE/CS
          5    809 FLORIDA(W)STATE(F)TALLAHASSEE/
? SLOUISIANA(W)STATE(F)BATON/CS
          6    194 LOUISIANA(W)STATE(F)BATON/CS
? SCALIFORNIA(W)UNIV(F)LOS/CS
          7   1025 CALIFORNIA(W)UNIV(F)LOS/CS
?SSYRACUSE(W)UNIV/CS
          8    540 SYRACUSE(W)UNIV/CS
? C3AND4;C3AND5;C3AND6;C3AND7;C3AND8
          9     10 3AND4   ALBANY          3
         10      5 3AND5   FLA STATE       4
         11      2 3AND6   LA STATE        5
         12     36 3AND7   UCLA            1
         13     12 3AND8   SYRACUSE        2
? T9/1;T10/1;T11/1;T12/1;T13/1; T13/2/1
```

Sample Output:

```
        13/2/1
ED144527  IR004775
  SUBJECT ACCESS PROJECT. SECOND QUARTERLY PROGRESS REPORT.
  ATHERTON, PAULINE
  SYRACUSE UNIV., N.Y. SCHOOL OF INFORMATION STUDIES.
  DEC 76   12P.; FOR RELATED DOCUMENTS, SEE IR 004 620 AND ED 129 229
  EDRS PRICE MF-$0.83 HC-$1.67 PLUS POSTAGE.
  DESCRIPTORS:    #CATOLOGING/  CONTENT  ANALYSIS/    DATA  BASES/
#EXPERIMENTAL PROGRAMS/ #INDEXING/ INFORMATION RETRIEVAL/  LIBRARY
RESEARCH/ ON LINE SYSTEMS/ SUBJECT INDEX TERMS
  IDENTIFIERS: MACHINE READABLE CATALOGING/ #SUBJECT ACCESS
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2. MATERIALS AND APPROACHES IN THE TEACHING OF ONLINE SEARCHING

Adapted from notes on a discussion led by Pauline Atherton

Teaching environments for online searching can be thought of in terms of these four types:

X: One search system, one data base

Y: One search system, several data bases

Z: Several search systems, one data base

W: Several search systems, several data bases

Most teaching materials are of one of these kinds. The Dialog Lab Workbook (1) is primarily type X, although there is a little type Y material toward the end. The Drexel Workbook (2) is type Z, as is the WEECN User Manual (3). The NFAIS chart (4) is a special case of type Z, since it is extremely rich in its coverage of search systems, but essentially data base independent.

Exercises developed from materials of type X, Y. Z. and W, may be one-search oriented, or multi-search oriented. This leads us to consider the following categories:

Teaching Materials	One Search	Several Searches
X	a	b
Y	c	d
Z	e	f
W	g	h

The extreme example of the Type a exercise is to take one search and work it over and over again using it as a framework for introducing every conceivable variation of search strategy, or every possible feature of the search language.

Some of the exercises in the WEECN User Manual are of type e.

Comparative presentations, whether they are database comparisons, system comparisons, or search strategy comparisons, are especially effective class demonstrations.

The NFAIS chart is very helpful in the teaching of comparative methods. The chart is organized into four big blocks, representing types of system features. Analysis

of this chart calls attention to the kinds of features that a system ought to have. The parallel columns enable you to isolate similarities and differences of interest. Students can check this information to see how these general features operate in specific databases that are of interest to them.

In another variation of tnis appraoch, students can take existing features of a system, and compare with a wish list (either one of their own, or one of the standard ones, such as Cuadra's (5)), and see how closely real world systems are coming to desired objectives.

There is no general-purpose textbook or workbook.

The Dialog Lab Workbook forces the student to consider cost, but does not deal with the problem of time and cost comparisons across systems.

The ONTAP Workbook (6) deals directly with questions of search strategy. Twenty queries are given and analyzed. Then the searcher compares how s/he would do it with a model search. The workbook provides a strategy typology (block building, fraction making, pearl growing), and also provides many specifics about precision, recall, and other devices for broadening and narrowing searches.

The Drexel Workbook is inexpensive, fast and simple. It uses a multisystem approach, but this tends to be confusing to beginners. Fortunately, the book is organized so that you can also go through it one system at a time, and several instructors report that if you do it this way, it works very well.

The WEECN User Manual deals with several systems and several databases, and is intended for both beginners and experienced searchers. The model searches have exceptionally rich annotations.

But neither the ERIC ONTAP Workbook nor the WEECN User Manual is intended for classroom use. You have to select, edit, and adapt these materials.

Some points to consider, when selecting print resources:

Which tool would I use, and why?

When would I introduce it?

How does it fit in with my other material?

How do I wrap assignments around the exercises in these tools?

Should everyone do the same search?

What level of complexity will my teaching situation tolerate?
(If you are dealing with multiple searches, multiple databases, and multiple systems all in one course, that makes for a very complex learning environment.)

REFERENCES

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4. Lawrence, Barbara, and Barbara G. Prewitt. On-line Commands. A User's Quick Guide for Bibliographic Retrieval Systems. Revised edition, Philadelphia: National Federation of Abstracting and Indexing Services, March 1977.

5. Cuadra, Carlos. "On-line Systems: Promise and Pitfalls", Journal of the American Society for Information Science, V. 22, p. 107-114 (1971).

6. Markey, Karen, and Pauline Atherton. ONTAP: Online Training and Practice Manual for ERIC Data Base Searchers. Syracuse, NY, ERIC Clearinghouse on Information Resources, June 1978.

3. EXAMPLES OF EXERCISES AND INSTRUCTIONAL PROJECTS

This chapter presents a miscellany of ideas for the teaching of online searching that were selected from materials contributed to the Institute by the participants and staff. They have been chosen to indicate the variety of approaches that were discussed during the Institute sessions, and represent working papers, discussion notes and tutorial specimens. They are reproduced here with relatively little editing, as an illustration of the informal and practice-oriented character of the discussions.

3.1 MATERIALS FROM THE UNIVERSITY OF CALIFORNIA, LOS ANGELES

Contributed by Jessica L. Harris and Harold Borko

BIBLIOGRAPHIC SEARCH ASSIGNMENTS

Assignment #1. Manual File (ERIC) Searching
DUE: Thursday, January 12.

a. Selection of article and topic

Select one article or report published between 1971 and 1975 which you could safely assume will be included in the ERIC Data Base.

Copy the bibliographic citation (Author, Title, Source, and Abstract) on a sheet of 8X11 paper. This is to be included in your LABORATORY NOTEBOOK.

b. Manual Search

Find this item in the printed ERIC service, RIE or CIJE. Check the indexes to locate access points.

Make a photocopy of the main entry. This entry is similar to the description you prepared manually in a above with the addition of the index terms.

Record the location of the entry, i.e., the A&I service, Volume, Number, Date, and Page. Be sure that all subject index terms are also recorded either in the entry or as a separate record.

c. Prepare a Statement of Interest

Using this article as one example of the subject on which you are seeking information, prepare a generalized, comprehensive description of the subject on which you wish to find references. Complete Computer Search Request Form.

Assignment #2. *N.B. Assignment #2 was not contributed to the Institute*

BIBLIOGRAPHIC SEARCH ASSIGNMENTS (continued)

Assigment #3.
DUE: Thursday, January 26

Regarding Search Strategy: Role of the Intermediary.

During a class session, students will exchange search requests. Half the class will act as information requesters and the other half will act as information specialists, e.g., intermediaries or reference librarians, responsible for reviewing the profile prior to conducting the search. Students acting as information specialists will be responsible for reviewing the request, preparing the search strategy, and completing the Computer Search Analysis Form. On-line searches will be conducted by the intermediary and not the requester. At another class session, the student role will be reversed.

The role of the intermediary is to:

a. Identify the various facets of the subject area. These facets are usually the major nouns or groups of nouns in the subject description. Expressions which are synonymous or interchangable in the context of the subject should be treated as the same facet. Authors' name may be included as a facet.

b. Expand the facets to include synonyms, variant spellings, abbreviations, etc. Consult a dictionary or thesaurus if available. Consult printed issues of the data base when preparing your search strategy.

c. Analyze the logical relationships between facets using the Boolean operations OR, AND, NOT.

d. Prepare a Venn Diagram of the search logic.

Assignment #4. Bibliographic Data Base Search: SDC-ORBIT -- ERIC File.
DUE: Tuesday, February 7.

Using the search strategy which you have prepared from another student's search request, conduct a literature search on the SDC ORBIT system using the ERIC File.

Save the printout of bibliographic references, for this will be the record that you will give the student in response to his or her information request.

Remember to get a record of the time spent on the search; this is the basis for computing the cost of the search.

The printout is to be incorporated into the Laboratory Manual of the student who has requested the bibliographic information. The student should prepare comments and an evaluation of the search results, including precision ratios.

BIBLIOGRAPHIC SEARCH ASSIGNMENTS (continued)

Assignment #5. Citation Searching: Lockheed DIALOG -- SSCI File.
Due: Tuesday, February 14.

Using the same Computer Search Request, an intermediary (not the student who made the request) is to prepare a search analysis and strategy for searching the Social Science Citation Index. Remember that you can search on keywords as well as on cited and citing authors.

Record the time spent on the search.

Save the printout of the bibliographic references and return this to the student who submitted the original request. The printout is to be placed in the Laboratory Notebook and analysed. Comments should include a comparison of the results obtained by searching the ERIC File and the SSCI File.

UCLA 0020

COMPUTER SEARCH REQUEST
(to be completed by requester)

Name_____ Date_____

Organization/Department/School_____ Telephone_____

Mailing Information

Name_____

Address_____

City_____ State_____ Zip_____

1. Short Title of Search.

2. Detailed Statement of Interest: Please describe as fully as possible the subject in which you are interested. Be specific and define terms which have special meaning in the context of your request. Include any important terms and their synonyms. Please list any terms which should be excluded.

UCLA

COMPUTER SEARCH REQUEST (continued)

0021

3. List any particular authors/corporate authors whose writing always is of interest to you (specify first and middle names, if possible):

_____

_____

4. List any journals or other periodicals which you regularly read and of whose contents you do not need to be informed:

_____

_____

_____

5. Check any of the following types of references that you do not want to receive: (May not be possible to specify when searching some data bases)

patents	_____	technical papers	_____
dissertations	_____	books	_____
conference proceedings	_____	periodical articles	_____

6. Do you wish to receive references to documents written in: (may not be possible to specify when searching some data bases)

_____English _____any language _____other (specify)_____

7. Do you wish to receive:

_____nearly all possibly relevant references; but possibly more irrelevant references

_____fewer, very possibly relevant references; may exclude some peripherally relevant references

8. List one or two references in your area of interest that you have recenly found useful.

_____

_____

_____

UCLA

0022

GSLIS 242

COMPUTER SEARCH ANALYSIS
(to be completed by information specialist)

Name_____ Date_____

Organization_____ Telephone_____

Search Facets

	A	B	C	D	E
Terms					

Search Strategy: Boolean Logic
(Example: A∩[B∩(C∪D)]

Venn Diagram

3.2 MATERIALS FROM THE UNIVERSITY OF OREGON

Contributed by Rod Slade

School of Librarianship
University of Oregon
Winter 1978

Lib. 507
On-Line Searching
Slade

DIALOG/ORBIT Training Guidelines

Each person will have two hours time to be split between use of ORBIT and DIALOG. You should break your terminal sessions into 15-20 minute segments so that two people can use the system in an hour. Concentrate your energies into using as many commands and features of both systems as you can. If you eventually plan to work with a particular group, use files appropriate to that interest. Otherwise, become familiar with a variety of data bases. Remember which aspects of the search are system related and which are characteristics of the data base searched. If you use real questions from your friends, make sure you've done a good interview and have them come along for the search. Because there is no mechanism for paying for them, we cannot do offline printing. Don't use the PRINT command in DIALOG. PRINT OFFLINE should be avoided in ORBIT. Type citations in a brief format so that your time is spent searching rather than typing output. Record keeping is very important. Document all time in the LOGBOOK and keep your own records for analysis in your evaluation/discussion of the DIALOG/ORBIT searching. Records such as search time, commands and features used, relevance of displayed citations, etc. are standard statistics. It may be helpful to indicate before going online just what type of coverage you are seeking in the search.

Tight - 100% Relevant
Recall Unimportant

_____

Broad - Retrieve ALL relevant Citations

Be calm. You can't break the machine. When something unexpected happens (like the system goes down) keep cool, read the messages from the machine and refer to the manuals, notes, and other materials. Workbooks and exercises provide good practice in most aspects of the systems' operations.

KEEP ACCURATE RECORDS

University of Oregon
School of Librarianship
Eugene, Oregon

Lib. 507
Online
Slade

Final Evaluation

The principal instrument for your evaluation in this class is a paper discussing two of ten suggested topics and a self evaluation of your use of DIALOG and ORBIT. The discussion questions are the traditional essay test variety and should not require more than four pages to answer. They are drawn from the readings and will be handed out Wednesday, March 8.

The self evaluation of your search experiences is your opportunity to demonstrate your knowledge of the nuts and bolts of searching. There are many things to consider in your evaluation, but emphasize those areas you feel you know best and are most important for a practicing librarian to use. The following list should suggest possible topics to which you might want to address yourself, but don't be limited by it--tell me what you learned using the systems.

Preterminal preparation. How much? How? Why?

Search formulation and strategy. How many descriptors? How many Boolean operators? Quality of terms--would others have been better? Did you expand? Use a thesaurus? Did you use the "best" logic and combinations?

Interaction and relevance feedback. Did you change your strategy online? How many citations did you display for relevancy? Did you look at good articles for additional descriptors? What formats did you use? Were you surprised at any of the results along the way? Evaluate your interaction with the software.

Use of system features. Did you LIMIT? How? Why? Did you truncate? Did it work well? How could you use the truncation feature better? What prefix codes did you use? How often did you use suffix indicators? What is the basic index for the file you are using? Are there other fields that you might have used more effectively? Did you use full text operators? Did you STRINSEARCH? What error messages did you receive? Did you encounter any hardware or system problems?

Evaluate, generally, your knowledge of the DIALOG and ORBIT systems and their operation. You may critique the systems if you so desire.

Search results. How was your relevance ratio overall? Was the search valuable? Did you answer the research question precisely or did you offer related citations to the topic? Was the search easy to formulate and run? Were the concepts easy to express in the language of the file? Discuss the relationship between the questions and the files. How did you choose the particular files you used? Could your reference interview have affected the outcome? Positively or negatively?

You may append a copy of the searches if you wish to refer to specific portions of them during your discussion. This is not required. There is no required length for this paper, but you should try for thoroughness in your evaluation. This list is by no means exhaustive.

3.3 LAB ASSISTANT NOTES - ATTACHED TO RETURNED OFFLINE HOMEWORK EXERCISES 1 & 2 OF THE DIALOG LAB WORKBOOK, BY CHARLES P. BOURNE

Contributed by Barbara Anderson* and Charles P. Bourne

Hi there,

Probably not all of you have liked your first close encounter with the DIALOG system. My predecessor had called the sessions "the lab pits"; and some of you who have done Exercises 3 & 4 would perhaps agree. Well, whether you left last week with love or hate, awe or disgust, wonder or frustration, lucidity or puzzlement, you might have discovered for yourself already that there are indeed golden keys to eternal happiness with the DIALOG system, namely:

1. good and error-free typing,
2. thorough and detailed reading (maybe even re-reading) of the manual,
3. perfect understanding of what you are asked to do for the on-line exercise,
4. good preparation beforehand,
5. a steady mind (and hand) while on-line.

Exercise 1 presents relatively few problems; except for the off-line calculation of the start-up time. (Problems 2-5) For the full Begin, add up the time you got after the Begin command and the time after the End command. There is no need to add the Explain Telenetl's time to it since we are interested in comparing start-up time only.

*Material used by Barbara Anderson at the School of Library and Information Studies, University of California, Berkeley.

Startup Techniques	Elapsed Time	Startup Cost for ERIC	Startup Cost for BIOSIS	Cost Savings Over Full Begin	
Full Begin	a (Begin to End)	a X $25 = a1	a X $45 = a2	ERIC	BIOSIS
BeginBypass	b (BeginBypass to Logoff)	b X $25 = b1	b X $45 = b2	a1 - b1	a2 - b2
Begin1	c (Begin1 to Logoff)	c X $25 = c1	c X $45 = c2	a1 - c1	a2 - c2

The total time you spent for Exercise 1 is a + b + c + Explain Telenet1's time = d.
The total cost for Exercise 1 is d X $15.

The rate for Direct Dial, according to Pacific Telephone, is:

Before 5 p.m. .22 for 1st min. .13 for each add. min.
After 5 p.m. .18 for 1st min. .12 for each add. min.
} plus tax

	Cost for 5 min. Connection	30 min. connection	60 min. connection
Before 5 p.m.	$.74 plus tax	$3.99 plus tax	$7.89 plus tax
After 5 p.m.	$.66 plus tax	$3.66 plus tax	$7.26 plus tax

UNIVERSITY OF CALIFORNIA

0027

EXERCISES 3 & 4

EXPAND, SELECT and COMBINE:

1. Always SELECT a term first, before COMBINEing.
2. The only exception is when you have EXPANDed a term previously, in which case simply SELECTing the E numbers or R numbers automatically join the terms in an ORed relationship.
3. EXPAND only when expandable, i.e., when the alphabetic listing shows a word has related terms under the RT column.
4. SELECT does not work with Boolean operators. Thus it is illegal to have:

   S Information * retrieval

   S Library + automation

5. On the other hand, COMBINE only works with set numbers and Boolean operators, and not with E and R numbers.
6. Distinguish between the following two commands, both legitimate:

   S E6, E9-E12

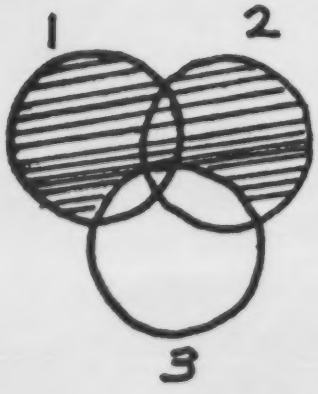
   (This will result in one set combining E6, E9 to E12.)

   S E6; SE9; SE10; SE11; SE12

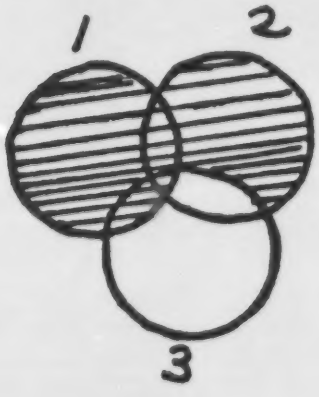
   (This is what is meant by stacking commands, note the semi-colons separating the commands, and the repetition of the command S. The result would be five separate sets, one for each E number.)

7. Parenthesis is important in COMBINEd logical operations.

   C (1 OR 2) NOT 3 is different from C 1 OR (2 NOT 3)



C (1 OR 2) NOT 3



C 1 OR (2 NOT 3)

8. Range feature cannot be used when COMBINEd with other logic such as:

C (1 or 2) AND (4-7/OR)

On-line Homework:

Problems 3 & 4 (Ex. 3)

? E Archive

(The computer responds with a list of terms alphabetically related to Archive.)

? S E6, E9-E11

(Set 1 for alphabetically related terms for archives of different types.)

? E (Archives)

(or simply E E9, which is the E number for Archives in the alphabetical listing. In either case you'll get a listing of terms which are subject related to Archives.)

? S R1-R12

(Set 2 for subject related terms that represent Archives of all types.)

Problems 3 & 4 (Ex. 4)

3. ? S Information Retrieval

(Due to the ambiguity of the phrasing of this question, S Information (w) Retrieval/DE, ID will also be acceptable)

(Set 1)

? S Information (w) Retrieval

(Set 2)

? S Information; S Retrieval

(Sets 3 AND 4)

? C 3 AND 4

(Set 5) } can be simplified as C (3 AND 4) NOT 2

? C5 NOT 2

(Set 6 representing Information AND Retrieval but not Information (w) Retrieval.)

4. ? S Information Retrieval/DE

(Set 1)

? S Information (w) Retrieval/TI

(Set 2, remember the (w) between Information and Retrieval; bound descriptors in ERIC are available for the descriptors and identifiers fields only)

? C 1 and 2

(Set 3, the overlapping set)

? C 1 NOT 2

(Set 4, the DE not TI set)

? C 2 NOT 1

(Set 5, the TI not DE set)

? S Information (w) Retrieval/AB

(Set 6)

? S Information (w) Retrieval/AB,TI,DE

(Set 7)

or

? C 1 OR 2 OR 6

(Set 7)

UNIVERSITY OF CALIFORNIA

0031

L.222
DUE: January 20, 1978

BIOSIS EXERCISE

Assigned reading:

"Guide for Designing Profiles for BIOSIS PREVIEWS," in BIOSIS Search Guide, pp. E-1 to E14.

Design a search profile on a subject of your choice, as if to run on the BIOSIS Previews data base as an SDI search.

Use at least one cross code, and, if appropriate, one or more biosystematic codes.

State the subject of the search, identify the concepts, and expand and translate the concepts in logical groups, as shown below. Use $ as a truncation sign where needed. Consider word segmentation practices. Use genus-species and/or common names as appropriate.

EXAMPLE

Topic: Effect of clearcutting in forests on deer

A. Identify concepts: 1. Clearcutting 2. Deer 3. Forestry

B. Expand and translate concepts:

CLEARCUTTING OR CLEARFELLING CLEAR CUTTING CLEAR FELLING	AND	DEER OR ODOCOILEUS	AND BC85725 (Cervidae: includes deer, moose, elk, etc. Code included to prevent DEER from retrieving DEER MICE AND DEER FLIES)	AND	CC53500$ (Forestry a forest pro ducts, all levels)

C. Indicate logic to be used.

Note: The BIOSIS Search Guide is available at the Reference Desks at the following locations:

Library School Library (2 copies on reserve)

Biology Library (2 copies at Reference Desk)

Public Health Library (1 copy at Reference Desk)

3.4 4-H CLUBS

Example of an Annotated Search Topic from the ERIC ONTAP File.

When the Institute was held in March 1979, the ERIC ONTAP Workbook had not yet been released. This exerpt was contributed by Pauline Atherton, both as a preview of that document, and also as an aid to the Institute participants in their online examination of the ERIC ONTAP FILE.

0033

Search Topic Number 1: 4-H CLUBS, THEIR MEMBERS AND ACTIVITIES

Logic and Vocabulary

A single concept is present in the topic, 4-H Clubs. Consideration must be given when constructing the formulation to include various spellings of the Club. No descriptors are listed in the ERIC Thesaurus which directly refer to 4-H Clubs so the search formulation includes free text searching.

Output Specifications

No specifications are required.

"Perfect"Search Formulation

```
1 S 4(W)H

2 S FOUR(W)H

3 C 1 OR 2
```

Comments: All subject-conveying fields are searched in this formulation.

Evaluation

Total number of retrieved citations = 21
Recall = 17/17 (100%)
Precision = 17/21 (85%)

At this point the number of citations (21) was sufficiently small that it was felt to be unnecessary to impose the "member" or "activities" aspect of the search. This is an example of starting with the most specific facet first.

If a high precision search were required, you could search only the identifier field as in the following formulation:

```
1 S 4(W)H/ID

2 S FOUR(W)H/ID

3 C 1 OR 2
```

Total number of retrieved citations = 14
Recall = 14/17 (82%)
Precision = 14/14 (100%)

Relevant citations:

EJ 120 500	EJ 109 322	ED 109 352	ED 105 102	ED 102 469
EJ 117 540	EJ 107 077	ED 109 351	ED 105 101	ED 100 323
EJ 113 715	EJ 107 045	ED 109 205	ED 105 100	ED 095 289
		ED 105 103	ED 104 895	

3.5 CONSIDERATIONS IN THE DESIGN OF EXERCISES

by

Edmond Mignon

As we guide our students through a sequence of increasingly challenging experiences, the exercises that we provide seem to me to fall into three graded categories. The final category is the case where information requests are solicited from the class and the students deal with the skills of the full literature searching process from the preliminary end-user interview in the analysis and evaluation of the output. This is our closest classroom model of the professional service situation and the procedures for making this model credible and effective will be demonstrated at another session. I would now like to comment on the exercises in the two prior categories that lead up to the model of the full service situation.

The first category of exercises is illustrated by the kinds of problems that you are familiar with from the DIALOG Lab Workbook. This kind of problem isolates a single feature of the search language such as Expand or Limit, and provides the student with an introductory experience to see for her/himself how it works by showing how a series of step by step modifications of that feature affect the number of citations reported by the system. This is the equivalent of the parts of foreign language textbooks where one chapter will focus on expressions involving inflected possessives, another on auxiliary verb forms, and so forth. As a preparatory experience for building up facility and confidence I think this is very sound pedagogy, for in the execution of a complete search, just as in holding even a simple conversation in a learned language, the student has to be alert to all the features at once. If you start right out with a model of a complete searching situation this can be overwhelming to many beginners, but the isolated-feature exercise serves the very useful purpose of familiarizing the students with the mechanisms of properly using the conventions of the search language without burdening them with the additional concerns of planning strategies, coping with unanticipated system responses and analyzing output citations. These are issues that the students will not be able to really concentrate on until they have acquired enough facility with the conventions to be able to key them in without having to constantly dive for the reference manuals to remind themselves about when to use commas or semicolons or equal signs.

Once our students have had the opportunity to convince themselves that they can successfully invoke these conventions, the novelty of the search language will start to wear off and they will be ready and eager to try their hand at "real" searching problems. It is at this point that we introduce the second category of problem, which is the tutorial search exercise. Search problems used here differ from the ones in the third category in that instead of being generated freely by the students, they are prepared and worked out by the instructor in order to build skills and illuminate common problems in search situations. We are familiar with these from their widespread use as illustrative specimens in producer's user manuals and in the materials for the Dialog advanced user sessions. It takes a modicum of cunning to select material for tutorial searches and I'd like to propose some suggestions for

selecting this kind of material.

The ideal tutorial search problem should have the following properties:

1) It should have credibility

2) It should have an element of controlled complexity but not be so difficult that it frustrates the students

3) The outcome should not be ambiguous: the students should be able to tell when they've made a successful strategy decision and they should be able to account for the system responses generated by the exercise.

It is this last point that I wish to go into in detail about now, because I think this is where some pedagogical craftsmanship takes place. Suppose that after the manipulation of commands the student receives the system message that 15 citations meet the requirements of the search prescription. Next they ask to have some citations typed, and typically the outcome will be a mixture of things of likely, unlikely or uncertain usefulness. At this point the student can make a judgment as to whether the indexing on these items provides clues for strategy modification or whether this output is as good as the data base can do, and decide to log off.

Now this is a perfectly reasonable analog for the real life situation where the search is carried out in the absence of the end-user, and indeed the students' own reports of how they evaluate the citations they receive are excellent evidence of the growth of their professional judgment. But what about the practice search for the situation which assumes the presence of the end-user? Since it's often impractical to station end-users by the terminals while the students examine their output, we have to find a proxy for the end-user and I'd like to tell you about one method of doing this.

First you go to the articles in the primary literature and you scan for passages that look like this:

> CULTURE, PERSONALITY, AND SEX DIFFERENCES During the past 5 years, a large number of studies attempted to show sex differences in cooperation. Though the results are inconsistent, the data seem to show that female pairs are generally more competitive than male pairs, but in mixed-sex pairs, the sexes do not differ significantly as to cooperativeness (20, 33, 67, 88, 199, 219, 298, 312, 415, 469, 483, 492).

Ex. 1. Text from Citing Article

Now that passage represents a judgment by a subject specialist that those 12 papers are significant contributions to the topic that has been mentioned in the previous sentence. Next you go to the end of the article and notice the citations that these reference numbers refer to. (Example 2)

Literature Cited

1. Abelson, R. P. 1973. Comment on "group shift to caution at the race track." *J. Exp. Soc. Psychol.* 9:517–21
2. Ibid. The statistician as viper: Reply to McCauley and Stitt, 526–27
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23. Belovicz, M. W., Finch, F. E. 1971. A critical analysis of the "risky shift" phenomena. *Organ. Behav. Hum. Perform.* 6:150–68
24. Bennett, C., Lindskold, S., Bennett, R. 1973. The effects of group size and discussion time on the risky shift. *J. Soc. Psychol.* 91:137–47
25. Benton, A. A. 1971. Productivity, distributive justice, and bargaining among children. *J. Pers. Soc. Psychol.* 18:68–78
26. Benton, A. A., Druckman, D. 1974. Constituent's bargaining dentation and

Example 2

Now you go on-line and, using an author approach, verify that a good number of these references are actually in the data base. (If it turns out that this is not the case then junk your source article and try another one.) When you locate your hits, type them out in format 2 so that you can see how they've been indexed. (Example 3)

```
? T18/2/1
18/2/1
DOC YEAR: 1973 VOL NO: 50 ABSTRACT NO: 00882
  POWER: OPPORTUNITY COSTS: AND SEX IN A MIXED-MOTIVE GAME.
  BEDELL: JEFFREY: SISTRUNK: FRANK
  SEMINOLE COUNTY BOARD OF PUBLIC INSTRUCTION: STANFORD: FLA.
  JOURNAL OF PERSONALITY & SOCIAL PSYCHOLOGY  1973 FEB VOL. 25(2)
219-226
  CLASSIFICATION: 10
  SUBJECT TERMS: HUMAN SEX DIFFERENCES, POWER, DYADS: INTERPERSONAL
INFLUENCES, PRISONERS DILEMMA GAME, PROFESSIONAL CONTRIBUTION,
COOPERATION, INTERPERSONAL INTERACTION: 23510, 39840, 15540, 26240,
40440, 40690, 11760, 26250
  INDEX PHRASE: OPPORTUNITY COSTS & SEX OF DYAD, COOPERATIVE BEHAVIOR
& USE OF POWER TO REWARD & PUNISH IN MIXED-MOTIVE GAME, COLLEGE
STUDENTS, SUPPORT FOR J. HARSANYI'S HYPOTHESIS
```

Example 3

Next you examine the index terms for these references, and work backwards to identify search strategies that would in fact lead to the discovery of these citations. Having verified that there is indeed at least one such search formulation, you are now ready to build your exercise, by paraphrasing the passage from your original article into a search question. But the search question is now accompanied by identifying elements from the reference that you have previously discovered from your examination of the data base. (Example 4)

Search Question: Research on the effect of sex differences on cooperative behavior

Data Base: Psychological Abstracts

Table of Selected Relevant References

Year	First Author	Source
74	Carment	J Confl Resolut
74	Hottes	J Personality
74	Skotko	J Confl Resolut
73	Bedell	J Pers Soc Psych
73	Black	J Pers Soc Psych
73	Miller	J Confl Resolut
73	Wiley	Sociometry

Comment: The best strategy so far found by the instructor retrieves 4 of these citations in the first 10 citations.

Example 4

One objection to this kind of exercise is that the student can cheat and go in with an author search and get the indexing from format 2 just the way you did and then throw away that output, log on again and do a subject search that will lead to a perfect outcome. The reply to this is that although this is possible, no student in their right mind would do this, because then they wouldn't get the learning value of the exercise. Furthermore, my experience has been that students who take a course in online searching are just too mature and seriously motivated to be tempted to engage in chicanery.

Another more serious objection is that this kind of problem makes no allowances for the experience of discovery: the student searcher may uncover references that are just as, or even more pertinent to the search question than the works mentioned in the originating article. This is quite true in principle, although my experience has been that this does not seriously degenerate the distinctive value of the exercise, which is to provide the students with some criteria other than their own (or the instructor's) subjective judgment with which to evaluate the goodness of the retrieval. I have also found that this kind of exercise works best if the article that generates the target references is quite recent.

Two additional examples of this kind of exercise are provided on the following pages.

Search Question: EEG studies of Sleep-Assisted Instruction (Human subjects)

Data Base: Psychological Abstracts

Table of Selected Relevant References

Year	First Author	Source
76	Aarons*	Psych Bull
74	Lehmann	Electroenceph Clin Neurophysiol
73	Cooper	Am J Clin Hyprosis
73	Lasaga	Percept Motor Skills
72	Johnson	Dissertation
72	Levy	Austral J Psych

*Key paper

Search Question: Emprical tests of the identity - equivalence interpretation of Piaget's conservation theory.

Data Base: Psychological Abstracts

Explanation: In 1967 Elkind proposed that Piaget's conservation task actually taps two kinds of knowledge: the realization that a given quantity is not changed in perceptual appearance (the identity component) and the realization that a particular quantity is still equal to some second quantity (the equivalence component). Elkind argued that an understanding of identity was necessary but not sufficient for solution of the equivalence problem. What must be added to the recognition of identity is a kind of transitive inference: The two stimuli were equal to start with, the transformed stimulus has not changed in quantity (this is the identity component), therefore the two stimuli are still equal. Since the equivalence task appears to involve this additional deductive step, Elkind suggested that an understanding of identity may develop earlier than an understanding of equivalence.

Table of Selected Relevant References

Year	First Author	Source
75	Chiseri	Dissertation
75	Bush	Percept Motor Skills
75	Brainerd*	Psych Bull
73	Koshinsky	J Exp Child Psych
72	Elkind	Develpm Psych
70	Hooper	J Exp Child Psych

*Key paper

3.6 DESIGN AND EVALUATION OF EXERCISES

adapted from notes by Charles P. Bourne

I. GRADING WITH THE DIALOG LAB WORKBOOK

Initially, it was hoped that it would be possible to assign a grade to the work done by a student with this workbook.

The basis for the grade might be the time taken (compared to the baseline averages known from many other students on the same exercises), or the results on the traces or the homework sheets.

After trying for several classes, and 2 different search systems, we gave up on trying to assign a grade, and scored only on the basis of whether or not the required number of exercises had been turned in (i.e. the lab was on a pass/fail, self-paced basis).

Difficulties in grading included:

1. sorting out individual contributions when the exercises were done as teams.
2. the sequential nature of the exercises, so that a snag or wrong result at an early point in a lab exercise could invalidate subsequent results in that session.
3. the inherently subjective nature of much of the work.

II. GRADING SEARCH STRATEGY

Search strategy is such a subjective thing, that grading can only be done in carefully controlled test cases. ONTAP was designed with this in mind.

ONTAP provides a mechanism for the direct evaluation of the search strategy (and search execution) performance of a student--and in a way that can be compared for several students with the same search topic.

3.7 ON EVALUATION: A DISCUSSION PROPOSAL

by Edmond Mignon

How might we test a student's readiness for professional searching responsibility? Let us consider an analogy from other professions. If we examine the practices of, say the legal, medical and engineering professions, we find a situation in which the profession has to determine whether a candidate is ready to make decisions which will be at a level of current professional practice. But the real decisions can't be tested directly: we can't say "Let's see if you can build a skyscraper that will stand up, or let's see if you can save a life". Part of the procedure of certifying boards is to ask for a demonstration of factual knowledge, which by itself is no indication of wisdom, but is certainly a part of the skills that we would want a practitioner to command if they were to be entrusted with the task of building a structure, or defending an accused, or healing the sick. The Medical Library Association has already committed itself to this kind of testing, and this procedure could be applied to online knowledge as well. Suppose we were to put some questions of this sort to a prospective searcher...

KLIC is a term chiefly associated with databases in

1. public affairs
2. chemistry
3. government reports
4. interdisciplinary research

Proximity searching is a form of

1. citation searching
2. chronological searching
3. term coordination
4. telefacsimile transmission

Command stacking refers to

1. biasing the output
2. batching multiple searches
3. SDI services
4. streamlined statement input

Now it is not difficult to think up a hundred or so questions of this sort. They are similar to the kind of questions that are given on CPA exams or exams for professional engineer's licenses. The questions are deliberately designed to avoid subtlety; the idea is that if you know your stuff, the preferred answer is instantly obvious, and if you're faking, you'll be easily detected. Now how many of you would be willing to say that if one of your students could not get better than 2 out of 3 right on an exam like this, they should not be considered qualified online searchers?

For the moment, let us not worry the issue of Who ought to administer such an exam.

For purposes of argument, let's just assume that we would make up our own exams of this sort for use with our own students. The issues that I would like to have your opinion on are:

1. Is this kind of testing appropriate for establishing the qualifications of an online searcher?

2. What other kind of testing would be fair, practical and appropriate?

4. MULTIDATABASE SEARCHING

Notes and exercise prepared by Frances G. Spigai

Part I: Guidelines

1. Don't lock search concepts into keywords/descriptors used by the database you're most familiar with.

2. Relevance vs. recall
   For high relevance, low recall, you can usually use full-text proximity searching across databases.

   For high recall and high relevance you should employ all the relevant searchable parts of records in a database. This means you'll have to use search features which vary from database to database.

3. Use SEARCH-SAVE for "OR" concepts in lengthy and/or comprehensive searches. You can then employ individual features of different files without problems and "AND/OR" then with your saved search after SEARCH/SAVE execution (e.g., LIMIT to MAJOR concept codes in BIOSIS, or using a direct SELECT from related terms in PSYCH. ABS.)

4. Codes vs. natural language. Often codes represent a broader concept than descriptors or titles words allow you to find through a natural-language search (e.g., concept codes in BIOSIS, category codes in AGRICOLA or decimal codes in CAB). The use of these controlled "classification/coding" schemes should yield higher recall than access by natural language alone.

5. Language/spelling differences

   Behaviour vs. behavior (CAB and AGRICOLA)
   Behavior (standardized spelling) (BIOSIS)
   Mal nutrition (BIOSIS)
   Undernutrition (predominantly British use) vs. Undernourished

6. Truncation
   S DIET? in SOCIAL SCISEARCH won't present a problem today with respect to diet, diets; however

   S DIET? in BIOSIS and CA CONDENSATES will yield more info. on diethyl compounds on diets.

7. SORT output where it is useful - There's no extra cost for a multidatabase search. It's easier to spot the duplicates in a search by title, you can go seek the documents on the shelves when it's by journal title, etc.

8. Cost trade-offs
   High recall means more offline prints (average 10¢ per record). High relevance means more online search time (average= 75-80¢/minute). Do you refine the search or edit the output?

Be prepared to spend at least 10 minutes skimming documentation for each database you don't know. If you want comprehensive recall you may have no choice.

Part II: Illustrative Exercise

Question: Effects of nutrition on the mental development of preschoolers and of elementary school children.

Context: Research project for Behavioral Sciences Institute & Nutrition Dept at XYZ University

Exercises

(1) Indicate all the files which you judge have primary relevance to the question. Circle file numbers (eg. (8))

(2) Indicate all the files which you judge have relevant documents other than the ones circled, but are of secondary relevance. Put a check next to these files (e.g., ✓32)

(3) Which file would you choose for a "pilot search"? Why?

File No.	DATABASE (supplier)	Online Connect Time Rate $/Hour	Offline Print Rate Per Full Record
	SCIENCE		
10	†AGRICOLA (Nat. Agricultural Library, U.S. Dept. of Ag.)	$25/Hr	5¢
55	†BIOSIS PREVIEWS 1969-1971 (Biological Abstracts, Inc.)	45	10
5	†BIOSIS PREVIEWS 1972-present (Biological Abstracts, Inc.)	45	10
2	CA CONDENSATES 1970-1971 (American Chemical Society)	35	8
3	CA CONDENSATES/CASIA 1972-1976 (American Chemical Society)	45	16
4	CA CONDENSATES/CASIA 1977-present (American Chemical Society)	45	16
43	CA PATENT CONCORDANCE (American Chemical Society)	45	12
31	CHEMNAME™	60	12
50	†COMMONWEALTH AGRICULTURAL BUREAUX ABSTRACTS (Commonwealth Agricultural Bureaux)	65	15
35	COMPREHENSIVE DISSERTATION ABS. (Xerox U. Microfilms)	55	12
72	EXCERPTA MEDICA (Excerpta Medica)	55	15
73	EXCERPTA MEDICA IN PROCESS (Excerpta Medica)	55	15
58	†GEOARCHIVE (Geosystems)	70	20
12	†INSPEC 1969-1977 (Institution of Electrical Engineers)	45	10
13	†INSPEC 1978-present (Institution of Electrical Engineers)	45	10
94	†SCISEARCH 1974-1977 (Institute for Scientific Information)	70	10
34	†SCISEARCH 1978-present (Institute for Scientific Information)	70	10
42	SPIN (American Institute of Physics)	35	10
65	†SSIE CURRENT RESEARCH (Smithsonian Science Info. Exchange)	90	20
	APPLIED SCIENCE & TECHNOLOGY		
45	APTIC (Air Pollution Tech. Info. Ctr. & the Franklin Institute)	$35/Hr	10¢
44	AQUATIC SCIENCE & FISHERIES ABSTRACTS (NOAA)	35	10
23	CLAIMS™/CHEM 1950-1976 (IFI/Plenum Company)	150	10
24	CLAIMS™/CHEM 1977-present (IFI/Plenum Data Company)	150	10
25	CLAIMS™/CLASS (IFI/Plenum Data Company)	90	10
57	CLAIMS™/GEM (IFI/Plenum Data Company)	90	10
8	†COMPENDEX (Engineering Index, Inc.)	65	10
60	CURRENT RESEARCH INFORMATION SYSTEM (USDA)	60	10
69	ENERGYLINE® (Environment Information Center, Inc.)	90	20
40	ENVIROLINE® (Environment Information Center, Inc.)	90	20
68	†EPB (Transport Assoc. of Santa Barbara)	60	15
51	FOOD SCIENCE AND TECHNOLOGY ABS. (Int. Food Info. Service)	65	15
77	INTERNATIONAL PHARMACEUTICAL ABS. (Am. Soc. of Hospital Pharmacists)	50	15
14	†ISMEC (Data Courier, Inc.)	65	12
33	†METADEX (American Society for Metals)	80	12
29	METEOROLOGICAL ABS. (Am. Meteorological Soc. and NOAA)	50	10
63	MBS ABSTRACTS (Maritime Research Information Service)	35	10
6	†NTIS (National Technical Info. Service, U.S. Dept. of Commerce)	35	10
28	†OCEANIC ABSTRACTS (Data Courier, Inc.)	55	10
48	PIRA (Research Assoc. for Paper & Board, Printing & Packaging Indus.)	55	15
41	†POLLUTION ABSTRACTS (Data Courier, Inc.)	65	10
65	SSIE CURRENT RESEARCH (Smithsonian Science Info. Exchange)	90	20
52	TSCA 1977 CANDIDATE LIST (U. S. Environmental Protection Agency)	45	15
33	†WORLD ALUMINUM ABSTRACTS (American Society for Metals)	50	10
67	WORLD TEXTILES (Shirley Institute)	55	10
	SOCIAL SCIENCES & HUMANITIES		
9	†AIM/ARM (Center for Vocational Education)	$25/Hr	10¢
38	AMERICA: HISTORY & LIFE (ABC-Clio, Inc.)	65	15
56	ART MODERN (ABC-Clio, Inc.)	60	15
64	CHILD ABUSE AND NEGLECT (Nat. Ctr. for Child Abuse and Neglect)	35	10
1	†ERIC (Educational Resources Information Center)	25	10
54	†EXCEPTIONAL CHILD ED. RESOURCES (Council for Except. Children)	25	10
39	HISTORICAL ABSTRACTS (ABC-Clio, Inc.)	65	15
36	LANGUAGE & LANGUAGE BEHAVIOR ABS. (Social Abs., Inc.)	55	15
61	LISA (Learned Information Ltd.)	55	15
47	†MAGAZINE INDEX (Information Access Corp.)	45	10
71	†MLA BIBLIOGRAPHY (Modern Language Assoc.)	55	15
46	NICEM (National Information Center for Educational Media)	70	20
70	NICSEM/NIMIS (National Info. Ctr. for Special Education Materials)	35	10
201	†ONTAP	15	n/a
11	†PSYCHOLOGICAL ABSTRACTS (American Psychological Assoc.)	50	10
7	†SOCIAL SCISEARCH® (Institute for Scientific Information)	70	10
37	†SOCIOLOGICAL ABSTRACTS (Sociological Abstracts, Inc.)	55	15
	BUSINESS/ECONOMICS		
15	†ABI/INFORM (Data Courier, Inc.)	$65/Hr	10¢
19	†CHEMICAL INDUSTRY NOTES (American Chemical Society)	90	20
26	†FOUNDATION DIRECTORY (The Foundation Center)	60	30
27	†FOUNDATION GRANTS INDEX (The Foundation Center)	60	30
59	†FROST & SULLIVAN DM† (Frost & Sullivan)	90	20
75	†MANAGEMENT CONTENTS® (Management Contents, Inc.)	55	10
49	†PAIS INTERNATIONAL (Public Affairs Information Service, Inc.)	60	15
42	†PHARMACEUTICAL NEWS INDEX (Data Courier, Inc.)	65	15
22	†EIS INDUSTRIAL PLANTS (Economic Information Systems, Inc.)	90	50
92	†EIS NONMANUFACTURING ESTABLISHMENTS (Economic Information Systems, Inc.)	90	50

The following table provides the ranking of the data bases, as chosen by the Institute participants in working out the illustrative exercise. The ranking was obtained from a weighting scheme, in which a choice for a "pilot" searching received a weight of 3, a primary (circled) choice was weighted 2, and a secondary (checked) choice was weighted 1. Thus, if 4 participants chose CAB for a pilot search, this contributed 12 points to the score for that database.

RANKING OF DATABASE CHOSEN BY PARTICIPANTS

		# pts	"pilot" (3)	primary (2)	secondary (1)
1	CAB	41	4	13	3
2	AGRICOLA	40	3	14	3
3	ERIC	37	2	13	5
4a	FSTA	26	1	10	3
4b	BIOSIS	26	2	7	6
5	PSYCH. ABS	22	0	7	8
6	CRIS	21	0	10	1
7	SOC SCI SEARCH	16	0	3	10
8	C DISS. ABS.	15	0	5	5
9a	SCISEARCH	14	0	5	4
9b	SSIE	14	0	3	8
9c	NTIS	14	0	2	10
10a	EXC CHILD	11	0	3	5
10b	CHILD ABUSE	11	0	2	7
11	PAIS	5	0	0	5
12a	CA COND	2	0	0	2
12b	PNI	2	0	0	2
12c	FDN GRANTS	2	0	1	0
13a	LLBA	1	0	0	1
13b	HISTORICAL	1	0	0	1
13c	NICEM	1	0	0	1

COMPARATIVE TABLE OF TERMS/TI POSTINGS*

	NUTRITION 1	MALNUT 2	DIET 3	BEHAVIOR 4	MENTAL 5	CHILDREN 6	CHILD 7	(1 OR 2 OR 3) AND (4 OR 5) AND (6 OR 7)
CAB	5385	679	3028	1071	70	212	1828	8
AGRICOLA	10661	654	2938	3979	80	379	1092	1
ERIC	378	55	11	4071	1508	3529	11709	5
FSTA	541	23	346	57	3	6	93	0
BIOSIS	4773	MAL-NUTRITION	3582	14022	1571	1929	13373	7
PSYCH ABS.	54	70	68	13257	5107	3101	13073	3
CRIS	411	24	43	232	13	18	52	0
SOC SCI	463	148	227	9777	4446	4180	9871	2
DISS. ABS	909	36	370	12027	1833	1494	9578	1
SCISEARCH	2513	705	2655	16478	1775	2787	12688	6
NTIS	165	21	133	4612	587	193	389	0
EX. CHILD	23	18	6	1021	947	2090	5933	1
CHILD ABUSE	0	1	0	14	29	1276	614	0
CA COND	2725	243	1690	15313	118	80	1029	1

*INDICATES COVERAGE OF INDIVIDUAL CONCEPTS IN TITLE

BIOSIS SEARCH ON THE EFFECT OF
NUTRITION ON BEHAVIOR IN CHILDREN

Comparative Strategies

(b) = broadest strategy: high recall

(n) = narrowest strategy: high precision

(m) = median strategy

```
        23mar78 13:21:36 User312
  $0.15  0.006 Hrs File1*
  $0.03  Telenet
  $0.18  Estimated Total Cost
File5:BIOSIS PREVIEWS 72-FEB78
      (Copr. BIOL ABST Inc.)
         Set Items Description (+=OR;*=AND;-=NOT)
         --- ----- ---------------------------
? SCC=07004
           1 55964 CC=07004  BEHAVIOR BIOL-HUMAN
? L1/MAJ
           2 12760 1/MAJ
? SBEHAVIOR
           3 22241 BEHAVIOR
? SBEHAVIOUR
           4     0 BEHAVIDUR
? SBEHAVIOR/DE:SBEHAVIOR/TI;C5OR6
           5  8711 BEHAVIOR/DE
           6 14022 BEHAVIOR/TI
           7 22241 5OR6
? C1OR3;C2OR5;C2OR7
           8 74721 1OR3              (b)
           9 20536 2OR5              (n)
          10 32949 2OR7              (m)
```

```
? SCC=13203;L1/MAJ
          11 23923 CC=13203  NUTRITION-MALNUTRITI

          12  6814 CC=13216  NUTRITION-PATHOGENIC

? L11/MAJ
          13 15989 11/MAJ
? L12/MAJ
          14  4246 12/MAJ
? C11OR12;C13OR14
          15 28711 11OR12
          16 19614 13OR14
? SDIET;SDIETS;SDIETARY;C17-19/OR
          17  8941 DIET
          18  2281 DIETS
          19  4932 DIETARY
          20 15704 17-19/OR
? SDIET/DE;SDIETS/DE;SDIETARY/DE;C21-23/OR
          21  5597 DIET/DE
          22   127 DIETS/DE
          23  1174 DIETARY/DE
          24  6878 21-23/OR
? SDIET/TI;SDIETS/TI;SDIETARY/TI;C25-27/OR
          25  3582 DIET/TI
          26  2160 DIETS/TI
          27  3800 DIETARY/TI
          28  9409 25-27/OR
? C24OR28
          29 15704 24OR28
? C15OR20;C16OR24;C16OR29
          30 39542 15OR20          (b)
          31 24759 16OR24          (n)
          32 31429 16OR29          (m)
? SCHILD;SCHILDREN;SCHILDHOOD;C33-35/OR
          33 11706 CHILD
          34 16404 CHILDREN
          35  2459 CHILDHOOD
          36 30349 33-35/OR        (b)
? SCHILD/DE;SCHILDREN/DE;SCHILDHOOD/DE;C37-39/OR
          37  9801 CHILD/DE
          38  3102 CHILDREN/DE
          39   167 CHILDHOOD/DE
          40 13052 37-39/OR        (n)
? SCHILD/TI;SCHILDREN/TI;SCHILDHOOD/TI;C41-43/OR
          41  1929 CHILD/TI
          42 13373 CHILDREN/TI
          43  2293 CHILDHOOD/TI
          44 17526 41-43/OR
                   (154,032 items to go)
? C40OR44
          45 30349 40OR44          (m)
                   (123,683 items to go)
? C8AND30AND36;C9AND31AND40;C10AND32AND45
          46   258 8AND30AND36     (b)
                   (123,425 items to go)
          47    28 9AND31AND40     (n)
                   (123,397 items to go)
          48    63 10AND32AND45    (m)
                   (123,334 items to go)
```

5. USING SEARCH AIDS AND OFFLINE RESOURCES

Adapted from notes by Frances G. Spigai

5.1 Brief Checklist of Elements of a User Aid Program

User Manual

- Coverage
  - Subjects, types of materials, proportions
  - Cover-to-cover vs. selective
- Changes and revisions
  - How reported?
- Editorial practices
  - Concept codes or categories
  - Special treatments (e.g. nonhuman subjects)
  - Indexing/abstracting protocols

Thesaurus

- Cross references, scope notes, history notes
- Rotated term displays
- Other subject access points, classification/format codes

Frequency/usage tables

Analystical studies/reviews

Update service/(Newsletter, user meetings)

Hotline/consulting

5.2 Elements of a Database Guide. (Based on editorial practice of Lockheed Information Systems' Guide to DIALOG Databases.)

[Table of Contents to Database Chapters]

1. Scope notes - Subject, source of database information, size, years, update frequency, contact points for publisher/originator.
2. Sample record in full format with fields identified.
3. Retrieval methods (subject, code, limiting, direct access), sortability and formats listed in tabular format.
4. Search options

   Basic Index. Description of each suffix field (e.g., TI, DE, AB, etc.) as it relates to that database--many examples of search strategy and of retrieved records.

   Prefix Codes. Description of each access point outside of the basic index (e.g., AU, CC, DT, etc.) as it relates to that database. Codes are often listed for short lists and when they are not elsewhere listed in a database publication (user aid).

   (Sometimes, this is the only place you can obtain a concise statement of scope, cataloging, classification and/or indexing policy for a database.)

5. Sortability. Online and offline sort options.
6. Format options. Sample prints of all available record formats for that database. Multiple file databases (e.g., ERIC with RIE and CIJE) have formats for each file where the differences are substantial.
7. Search examples (at least two). Narrative and print of online search strategy. Print of one or a few retrieved records.
8. Search aids. List of thesauri, directories and other publications about and from the database publisher (includes prices and availability)
9. Document Retrieval. Availability of source information from database publisher.

5.3 Checklist of Elements in a Database Description, with Comparative Examples

DATABASE DESCRIPTION

I. Quantity

A. Size online (Vendor - specific)*

1. Number of records
2. Size of full record (e.g., number of words)
3. Number of units or elements in a record which are intellectually discernable (e.g., author, classification, ID#, page numbers, dates, etc.)
4. Number of searchable elements in a record (e.g., author, journal name, ID#, publisher, year, etc.)
5. Number of full-text/free-text searchable elements in a record.
6. Size of searchable unit/element/access pt. (E.G. number of DIALOG "words" per element)
7. Proportion of record searchable
8. Proportion of record full-text/free-text searchable
9. Number of years available (online)
10. Number of issues/updates per year
11. Growth rate/year (number of records)
12. Growth rate/issue (number of records)

*All size elements can vary among online vendors (i.e., LOCKHEED, SDC, BRS)

DATABASE DESCRIPTION (Cont'd)

I. Quantity

B. Scope/coverage (Database - specific)**

1. Number and list of document types (e.g., dissertation, articles, etc.)
2. Number and list of sources/titles in each type (e.g., 2500 journal titles)
3. Comprehensiveness/selectivity of coverage within individual documents (e.g., cover to cover; excludes news; feature stories only; select articles, proceeding papers, etc.)
4. Levels of coverage (e.g., professional in field research vs. application; popular/layman treatment, etc.)
5. Languages of documents covered (e.g., ENGLISH, RUSSIAN, SWAHILI, etc.)
6. Countries of documents covered (international scope/domestic, etc).
7. Years of databases covered (e.g., 1861 - present)
8. Timeliness/currency (average 3, 6, 9, 12, month time lag between publication date of articles, reports covered and publication date/availability of abstracting/indexing service).
9. Subject emphases and omissions (e.g., includes all areas of medical research and clinical practice except nursing and paromedicine)
10. Comprehensiveness/selectivity within subject field (e.g., covers the 2500 "top" titles in the field which represent 90% of the most significant literature --or-- covers 3700 journal titles representing 90% of all the literature in this subject area)

**Database coverage policies

DATABASE DESCRIPTION (Cont'd)

II. Quality

A. Descriptive cataloging policies

1. Integrity of information/standardization (Authority lists maintained for authors, corporate authors, journals or sources, etc.)
2. Refereeing policy of document inclusion (e.g., ERIC/GRA ("all") vs. EXCERPTA (judgmentally most important); decision made by subject/practitioners - for example, medical doctors in EXCERPTA or information practitioners--librarians for AGRICOLA materials)
3. Abstracts/extracts/annotations — Indicative or informative or both

B. Classification policies

1. Structure of database -- hierarchical (NTIS, CA, most others) or no internal structure (ABI/INFORM) or topical wo subtopics
   1a. Searchable structure (usually classification, or section codes)

C. Indexing policies

1. Variety (number of index elements)/how many on line
2. Controlled or uncontrolled/online distinction and display
3. Specificity (narrowness vs. broadness)/how treated online (cascading, expand on related term)
4. Complexity (LC subject headings vs. CDI uniterms)/link within subject term or DF or IF
5. Relationships built (e.g., Psych. Abs.)/online thesaurus
6. Weighting of assigned terms/codes (ERIC, BIOSIS)/online treatment (LIMIT, Sx/DE*)

D. Price (per minute; per "hit" printed)

E. Ease of use - visibility of "quantity" and "quality" features

1. Database and record structures/display or output
2. Documentation and user aids/documentation and user aids)
3. Training/training

*Treatment of quality features (especially B-E) varies from vendor to vendor.

Three points to be made:

1. Invisibility (non-apparentness) of printed A&I tools wrt recall, relevance and search strategy because database policies are not (a) clearly spelled out and/or (b) evident. The invisibility of the online database compounds complexity structure is invisible because database is displayed a record at a time. Online vendor policies are not (a) clearly spelled out and/or (b) evident.

2. Databases cannot be separated from online vendors:
   1. recall is different
   2. search strategy is different
   3. value is different

3. Databases need quantitative and qualitative measures which will allow the searcher to understand the potential of searching one database relative to any other. These measures should result in expectations for potential recall and for potential relevance.

DATABASE DESCRIPTION

Comparasion of six online databases with respect to their size characteristics

Quantity	ERIC (1)	BIOSIS (5)	AGRICOLA (20)	PA (11)	SCISEARCH (34)	CAB (50)
1. No. records	300,000	2,300,000	1,100,000	250,000	1,800,000	650,000
2. Size of full record	CIJE/RIE $\frac{40 \quad 140}{100}$	75	40-45	150	40	250
3. Number of elements/rec.	19	12	16	18	13	18
4. No. of searchable elements/online addns.	15/4	8/4	14/3	13/1	8/1	15/3
5. Full text elem.	7	2	4	5	2	5
6. Size of searchable elements	Varies	Varies	Varies	Varies	Varies	Varies
7. Portion of record searchable	95%	95%	95%	95%	90%	95%
8. Portion of rec. full-text searchable	90%	40%	50-60%	85%	50-60%	90%
9. No. of years online	12	9	8	11	4	5
10. No. of updates/yr.	12	12	12	12	12	12
11. Growth rate/yr.	36K	240K	120K	30K	500K	120K
12. Growth rate/issue	3K	20K	10K	25K	40K	10K

TABLE I

All numbers are approximations, accurate to within 10%

MAJOR FULL-TEXT SEARCHABLE FIELDS

	ERIC	BIOSIS	AGRICOLA	PSYCH. ABS.	SCISEARCH	CAB
ABSTRACT (AB)	X	NOL	X	X	NA	X
CORPORATE (CS) SOURCE	X	NA	X	X	X	X
DESCRIPTOR (DE)	X	X	X	X	NA	X
MAJOR DESCRIPTOR (DE*)	X	[In LIMIT only with Concept Code]	NA	NA	NA	NA
SINGLE WORD DESCRIPTOR (DF)	X				NA	X
MAJOR SINGLE WORD DESCRIPTOR (DF*)	X	NA	NA	NA	NA	NA
IDENTIFIER (ID)	X	NA		X	NA	X
MAJOR IDENTIFIED (ID*)	X	NA	NA	NA	NA	NA
SINGLE WORD IDENTIFIER (IF)	X	NA			NA	X
MAJOR SINGLE WORD IDENTIFIER (IF*)	X	NA	NA	NA	NA	NA
TITLE (TI)	X	X	X	X	X	X

NO=Not online
NA=Not applicable

PREFIX CODE SEARCHING -- COMMON CODES

	ERIC	BIOSIS	AGRICOLA	PSYCH. ABS.	SCISEARCH	CAB
Author (AU)	X	X	X	X	X	X
Contract (CN)	X					
Doc. Type (DT)	X		X		X	X
Journal (JO, JN)	X	X	X	X	X	X
Report, Patent #(RN, PN)	X		X			X
CODEN (CO)		X		X		
Language (LA)			X	X	X	X
Issue, Journal Announcement (IS/JA)	X		X	X		
Search year/year Publication year (SY, PY,YR)	X		X	X		
Update (UD) (last issue Hape loaded -- useful for online SDI)	X	X	X	X	X	X

PREFIX CODE SEARCHING -- UNCOMMON CODES

	ERIC (1)	BIOSIS (5)	AGRICOLA (20)	PSYCH ABS. (11)	SCISEARCH (34)	CAB (50)
Legislative authority code	X					
Clearinghouse code	X					
Group code	X					
Bureau project #	X					
Corp. source code/sponsoring agency	X					
*Concept code		X				
*Concept name		X				
*Biosystematic code		X				
*Biosystematic name		X				
*Category code			X			
*Location			X			
*NAL Call #			X			
*Old category code			X			
*Class code				X		
*Subject code				X		
*Cited reference					X	
*Decimal code						X
Publisher						X
*Subject code						X
*Subfile (CAB A & I jnl)						X
Summary Language						X
*Subject name						X

*All these codes/fields are subject related

SPECIAL FEATURES

	ERIC	BIOSIS	AGRICOLA	PSYCH. ABS.	SCISEARCH	CAB
SORT			X	X		
RELATED TERM DISPLAY	X	X		X		
AUTOMATIC SDI	X	X	X	X		X
INCLUDED IN DIALIST	X	X	X	X	X	X
LIMIT						
ED or EJ	X					
AVAIL	X					
MAJ/M	X	X				
ACC#	X	X	X		X	X
NEW SPECIES		X				
LANGUAGE			X		X	
ANIMAL or Plant						X
ART/NON ART					X	
SEGMENTATION		X				
BIBLIOGRAPHY PRINTED or TYPED					(IN SOCIAL SCISEARCH)	

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5.4 How Search Aids Can Help the Teacher

(Adapted from comments by Edmond Mignon)

In the Babylonian Talmud there is a line which reads "if you want to understand the invisible, look carefully at the visible". Now a database is an invisible resource. You can't pick it up and hold it in your hand. You can't get any kind of overall profile of it by direct observation. You can't see a display of any more than a very small part of it at a time and you have no context for that display that enables you to estimate how typical or anomalous it is. Furthermore, the database is always changing. Additions, revisions, and enhancements are coming into the files at random positions and unobservable rates. Since we can't see these phenomena take place, we look for the artifacts we can see. And, as rabbinical wisdom suggests, we look carefully at them to make inferences about the properties that we can't observe directly. And this is where printed products have a role to play. Databases vary in their range of collateral documentation, but I would like to discuss four kinds of works which I have found useful:

1. Printed Indexes and Abstracts. In going through the main entries of a printed index, like CIJE, I always find it worthwhile to note the relative proportions of the volume taken up by different segments of the work. Do any classifications take up exceptionally large portions of the coverage? These may be richer in material for exercises. Are there any classifications that are exceptionally unusual or perhaps interesting to students? Sociology Abstracts has sections on feminist studies, studies in poverty, and even a classification called radical sociology. Do the Abstracts list the major descriptors applied to the documents? If so, this is an opportunity to look for apparent anomalies and incongruities in the indexing, and then use these as exercise material to show students how to plan for such anomalies when they reside in their invisible online format. I also like to scan the abstracts to see if there are aspects of any articles which would make these references plausible and desirable outcomes of searches, in which the search term would not correspond to terms in the controlled indexing vocabulary. These are good clues for exercises in full-text searching. Mention of a research method, such a participant observation, is often a good clue. Can we frame a problem where the object is not to find documents about participant observation, but to know, for example, if participant observation has ever been used in the study of something like motorcycle subcultures? I always like to check to see what kind of vocabulary is used to identify the kind of study that is being indexed. Is it a comparative study? A review or survey? A theoretical model? If so, what theory? To put the matter more generally, users are quite often not merely interested in literature about a particular topic - but are additionally interested in knowing about the types of discourse with which that topic has been treated. This is not the same thing as document type codes, which tend to refer to physical or editorial categories - such as hearings or monographs. But such codes say nothing about the kind of approach that the citation represents. So this will often be superb material for a hypothetical full-text search, because the abstractors are typically instructed to note the type of discourse or procedure used in a document. Extracting such documents from the print version of an index is usually very difficult - but scanning those print versions to establish that such parameters have indeed been included in the descriptions is a much more tractable affair.

(Incidently, it seems to me that as databases continue to grow, the need to discriminate according to type-of-treatment will become more urgent. This type of document characterization was a significant element in the design of a recent study comparing nine different databases in the field of pharmacy (1). I hope that convenience of online technology will encourage more investigators to undertake studies of this sort.)

Another thing that I inspect are the cumulative indexes to the print volumes. Does the indexing tend to be with very specific terms? Or do the indexers prefer broad terms which are then qualified with explanatory phrases for each entry, as is the case with ERIC or IPA? If subdivisions are used, are they standardized? How are index phrases or pre-coordinated terms treated? Fifteen minutes of inspection of the index to the annual volume of a printed product will give you a birds-eye view of the evidence of indexing practice which will provide you with all kinds of clues saying "this is how they work", and can be used to show clear cases where it will really work meaningfully. Many indexes have special features, such as rotated title displays or journal content listings, and again these will suggest ideas for meaningful exercises. I also prefer to avoid curiosities and freak cases, and look instead for features which have been built into the file which cannot be conveniently extracted from the print product, but which can be brought out by the application of an online approach.

2. The Thesaurus. This requires especially careful study, because your students make such heavy use of thesauri when planning their search strategies. PsychAbstracts has no scope notes at all in its thesaurus, a clue that there is likely to be much indexer variation in the application of terms. Furthermore, the display of related terms is incomplete. Truancy is a canonical term, but has no reference to the fact that School Truancy is also in the indexing vocabulary. You only find this out when you look at the rotated term section. Similarly, PsychAbstracts uses both mentally retarded and mental retardation. The main section of the thesaurus does not call attention to this fact, but this is revealed right away when you look at the rotated term index. Check to see if the thesaurus has a hierarchical display, - this is often a give-away for the indexing philosophy: The new ERIC Thesaurus has an elaborate and ingenious hierarchical display; on the other hand, the new edition of the Psych-Abstracts Thesaurus has none at all, with the editors coyly commenting that "the ambiguity introduced by hierarchically ranking terms has been determined to be unnecessarily confusing to the user and of very limited utility". Another thing to check is to see if the thesaurus uses numerical codes, whether they be for concepts or term categories, and are these searchable? If so, there can often be ways in which you can use your codes to make dramatic improvements in the results of a practice search. There are some excellent examples of use of BIOSIS codes in the material that's given in the DIALOG Advanced User Training sessions as well as in the BIOSIS portion of the Guide to DIALOG Databases.

3. Publishers Guides For the Use of Their Products. Search guides will draw attention to special features of their products that the publishers take particular pride in. I often take the illustrative examples presented in search guides and run them online myself. Nearly always I can discover variations in the illustrations that I can use to make an attractive and worthwhile exercise. In particular, look at the codes for searchable, but non-standard fields of the citations. This is particularly useful

when you are planning a search in a very large database for documents that you know are likely to be concentrated in only a small subset of that database. For example, you can go into NTIS and get an excellent list of documents dealing with the MESH indexing vocabulary. But if you don't combine MESH with subject category field 5B, you will also pick up a lot of citations to documents having to do with the use of mesh in parachute manufacture.

4. Professional Articles. The best of the printed studies of databases that have appeared in the journal literature represent a great deal of work that has been done to try to use analytical methods to make a database more visible. The article by Donati in Special Libraries (2), for example, goes far beyond the usual descriptive information and provides comparison of the relative strengths of rival databases that is most revealing for many purposes. It provides excellent introductory material when we introduce the topic of crossfile searching, but it can also be used for its excellent displays of apparent overlap and connections between databases, for Donati's materials and case studies are more accessible and revealing to many students than the kinds of scholarly bibliometric studies that appear in the research journals. It's reasonable for a beginner to think, for example, that Sociology Abstracts covers sociological documents, PsychAbstracts covers behavioral literature, and that all they have to do is assign a search question to the appropriate category, select the database for that category and call it a day. But the Donati tables show that the situation is not that simple, and what's more, they show it in a form that invites empirical online confirmation. Not surprisingly, SSCI and CDI are shown to have the broadest coverage, but Federal Index is also a big winner, with 12 categories marked "H" - a piece of information which prompted me, for example, to have a closer look at this database, particularly when you compare its size with the other two. SSCI has 400,000 records, CDI has 550,000 records, but Federal Index, with only 22,000 records which is rated high in 12 categories! It is also one of two databases, ERIC rather surprisingly is the other one, which rates a HIGH rating for women's issues but Sociology Abstracts didn't place at all in this category, despite the fact that in its print version there's a classification called "feminist studies". Well, you might say, how do we really know we can trust Donati? After all, he states "These opinions are the author's based on a review of subject classification schemes, journal coverage and his own experience with the files. Unfortunately a lengthy study would be required to make a more rigorous quantification of content." Now when we get to this point, I say to the students, "OK, unless you want to go write a doctoral dissertation, you're not likely to do that lengthy study. You don't have the time to do it now and most of you will never have the time in the future either. Furthermore, you can't wait to give service on these databases until the information scientists get around to publishing all the carefully controlled experimental studies, so what are you, as professional searchers, going to do about this? What kind of spot checks or confirmations or amendments of Donati's data could you do which, although they wouldn't satisfy the technical criteria for a research paper, they would tell you enough about the databases so that you would be willing to trust Donati's information?" The answers that students give to this question will be varied, sometimes naive, and often inconclusive. No matter. The point is that real learning at the level of professional decision making is going on. A background, a frame of reference, and confidence in the need and the capacity to use the visible to understand the invisible is being developed. And this is what our graduates will bring with them when they go to their terminals to serve end users.

REFERENCES

1. Madden, Mary and Ann MacDonald. "An Evaluation and Comparison of Nine Drug Information Retrieval Services." Drug Information Journal, v. 11, no. 1 (March 1977), p. 47-59.

2. Donati, Robert. "Selective Survey of Online Access to Social Science Data Bases". Special Libraries, v. 68, no. 11 (November 1977), p. 396-406.

6. Presearch Interviews for Online Searching

Materials prepared by Pauline Atherton

Much of the third day of the Institute was devoted to a presentation by Pauline Atherton on the use of videotapes for teaching presearch interviewing techniques. Following a reveiw of various user interviewing procedures, and a presentation of techniques for teaching the interviewing process, videotapes were made of volunteer Institute participants conducting simulated presearch interviews. With the permission of the volunteers, the videotapes were then shown to the participants, and comments on effective interviewing techniques were brought out in the ensuing discussion period.

No detailed noteswere prepared for these sessions. Participants were provided with a list of suggested references and a Competency Behavior Rating Scale form as an aid to self-assessment in observing videotapes. A more detailed checklist, covering both communication content and action skills, can be found on pages 51-53 of Librarians and Online Services (Knowledge Industry Publications, 1977), by Pauline Atherton and Roger W. Christian. Although these checklists are of considerable pedagogical value in alerting students to the variety of points to be considered in user interviewing, the CBRS checklist reproduced here is somewhat more convenient for assessing videotapes.

COMPETENCY BEHAVIOR RATING SCALE (CBRS) FOR COMPUTER-BASED REFERENCE SERVICE PERSONNEL

To be used for (a) self-evaluation, (b) performance measurement by superior; or (c) evaluation of trainee (pre and post training)

CHECKLIST OF SOME ACTION SKILLS VIEWED ON VIDEOTAPE OF PRE-SEARCH INTERVIEW

(For more detailed breakdown, write to P. Atherton, School of Information Studies, Syracuse University, 113 Euclid Avenue, Syracuse, New York 13210)

Rating Values:
- 10 - Fully effective
- 8 - Mostly effective
- 6 - Minimally effective
- 3 - Slightly effective, but mainly ineffective
- 0 - Ineffective

Number of Occurrences (Frequency)	Action Skill	Rating (Circle appropriate number for each occurrence)
_____	1. Clarification of Request	10 9 8 7 6 5 4 3 2 1 0
_____	2. Request Negotiation	10 9 8 7 6 5 4 3 2 1 0
_____	3. Vocabulary Construction for Search	10 9 8 7 6 5 4 3 2 1 0
_____	4. Search Strategy Formulation	10 9 8 7 6 5 4 3 2 1 0
_____	5. Administrative Details	10 9 8 7 6 5 4 3 2 1 0
_____	6. Tutorial Activity	10 9 8 7 6 5 4 3 2 1 0
_____	*7. Shaping Expectations/Goal Setting	10 9 8 7 6 5 4 3 2 1 0
_____	*8. Positive Reinforcement	10 9 8 7 6 5 4 3 2 1 0
_____	*9. Watching for Nonverbal Cues	10 9 8 7 6 5 4 3 2 1 0

SUMMARY:

Total Frequency_____ Score: Sum of Ratings_____

CBRS Scale (Average Level of Performance) $\frac{\text{Score}}{\text{Freq.}}$ = CBRS _____

* These items relate specifically to personal interaction skills.

EXAMPLE OF COMPLETED CHECKLIST FOR ONE INTERVIEW

_____	1. Clarification of Request	10 9 8 7 6 5 4 3 2 1 0
_____	5. Administrative Details	10 9 8 7 6 5 4 3 2 1 0
_____	8. Positive Reinforcement	10 9 8 7 6 5 4 3 2 1 0

Total Frequency_____ Total Score_____

CBRS Scale_____

OREGON WORKSHOP ON COMPUTER-BASED REFERENCE SERVICES

SOME BACKGROUND READINGS

General

Wanger, Judith, C. Cuadra, and M. Fishburn. Impact of On-Line Retrieval Services; A Survey of Users, 1974-75. Santa Monica, Cal., System Development Corp. 1976.

Atherton, Pauline and Christian, Roger. Librarians and Online Services. Knowledge Industry Publication, Inc., 1977. (especially chaps. 4, 6, 8).

The Role of the Information Professional

Mucci, Judith. "Videotape Self-Evaluation in Public Libraries: Experiments in Evaluating Public Service," RQ (Fall, 1976), 33-37.

Briggs, Bruce. "The User Interface for Bibliographic Search Services," p. 56-77 in Lancaster, F.W., ed. The Use of Computers in Literature Searching and Related Reference Activities in Libraries. Papers presented at the 1975 Clinic on Library Applications of Data Processing, April 27-30, 1975, Urbana, Univ. of Illinois, 1976.

Somerville, Arleen N. "The Place of the Reference Interview in Computer Searching : The Academic Setting," Online (October, 1977), 14-23.

User Satisfaction

Tessier, Judith, Wayne Crouch, and Pauline Atherton. "New Measures of User Satisfaction with Computer-Based Literature Searches," Special Libraries (November , 1977), 383-390.

7. DISCUSSION TOPIC: WHAT LEVEL OF TRAINING DO WE/ SHOULD WE PROVIDE?

A substantial and productive part of the Institute activities was devoted to a consideration of the objectives of programs in online searching in professional curricula of library schools. The outcome of these discussions was the position paper, Proposed Standards for Education in Online Searching in the Professional Librarianship Curriculum, which is being distributed through the ERIC service as a separate Institute document. The materials which follow represent some of the ideas that were presented in preparation for the discussion sessions.

7.1 EXAMPLE OF AN OBJECTIVES STATEMENT FOR A PROFESSIONAL COURSE IN ONLINE SEARCHING

Submitted by Syracuse University School of Information Studies

IST 630 Advanced Topics in Information Resources COMPUTER BASED REFERENCE SERVICES

OBJECTIVES OF COURSE:

1. Present an overview of all topics below.
2. Prepare the student to be a skilled searcher on at least one on-line interactive bibliographic retrieval system.
3. Prepare the student to handle the interpersonal communication problems which may occur during the pre- and post- search interviews.
4. Consider the administrative aspects of such services and their impact on library services to many different clientele.

TOPICS:

A - Data bases in computer-based bibliographic retrieval systems
B - Retrieval Systems (especially on-line, interactive computer systems)
C - Question Negotiation
D - Search and Retrieval
E - Vocabulary Considerations for Subject Retrieval
F - Administrative Aspects of Reference Service (esp. Computer-Based) serving various clientele in various settings

CLASS ACTIVITIES	FOR TOPICS	WITH MEASURE OF PROGRESS BY:
Discussions in class*	A-F	Noticeable participation
Readings	A-F	Reading reports and participating in mini-colloquium (second week)
Laboratory Work**	B-E	Completion of workbook plus volunteer demonstration
In-class assignments	A,C	Hand in and possible videotape recc
Overnight assignments	A,C-E	Hand-ins
Individual Work	arranged	Possibly a written report on a database following example provide special report on operational service: preparation of pathfinder on Pre-Search Interviews or User Satisfaction Measures; or pathfinder check or on-line system che

* Discussions will involve some team work
** Lab. work will involve some team work and of necessity, time on the computer

As budget funds for this lab work are limited we must monitor all student use and log times as we complete each assignment.

7.2 COMMENTS ON TRAINING

Adapted from notes by Charles P. Bourne and Jo Robinson

I. REVIEW OF TRAINING EFFORTS

Library School is presently a small part of training activities in the online field.

Overview of training activities:

A. Search Service Suppliers

1. Services with a Broad Constituency
   Examples: National Library of Medicine, Lockheed, Sytem Development Corporation, Bibliographic Retrieval Service

2. Services with a Limited Constituency
   Examples: SUNY/BCN, NASA/RECON, University of Georgia, US Department of Agriculture

B. Data Base Suppliers
   Examples: American Chemical Society, BIOSIS, ERIC, ISI.

C. Library School and Extension Programs
   Examples: Case Western Reserve University, Syracuse University, University of California, Berkeley

D. Library Cooperatives
   Example: NASIC

E. Professional Organizations
   Examples: ALA, MLA, ASIDIC

F. Other
   Individual consultants, user groups, etc.

II. WHAT LEVEL OF TRAINING?

A. Zero Level

NO. Some training must be supplied. Arguments are clear:

1. The real world, professionally, is full of the activity. The graduating student must at least have a speaking level understanding and recognition of it.

2. More job openings are requiring some training in this field. This training is important to student success in job hunting.

B. Consciousness - Raising Level

YES. Every student should at least receive a demonstration of this type of service. This need not take more than an hour of class time during one of the first courses, but could be more.

All students should at least have some basic understanding of machine databases, Boolean logic, search interviews, & search strategy, so that the search service doesn't have to start from scratch.

C. Operator Training

YES. But only as an option for the few that want to take it. This could be an advanced reference course for those people who want more training in this type of work.

Some employers will want their new employees to have training, some demonstrated level of proficiency, and continued willingness to work along these lines, instead of hiring recent graduates and planning to send them to the supplier's training session.

D. Data Base Training

Detailed training in all data bases no longer practical - too many files. Files provided by a search service are like a reference collection of print materials: can't teach individual details of every book in the reference collection. A workable compromise: detailed training for a few databases plus training about where you go to get information about other databases.

7.3 REFLECTIONS ON TRAINING

by Edmond Mignon

I can talk about what I do. I hope to learn from this Institute what we think we should do. One important thing that I do not do, is to teach specific details of a great many databases. My experience has been that in a typical service situation the online usage is concentrated on less than a handful of databases and I have no way to predict what these databases will be for each of the students. I place a heavy emphasis on the general procedures for getting to know the characteristics of a database, but I assume that the databases that a student will want to get to know well will be the ones that he/she will be using on the job. And until a job is in hand and the target databases are identified, I don't think it is the best use of a student's time to study a lot of databases in detail.

But when I sat down to try to specify the objectives that I do try to achieve with each of my students, I was surprised to find out that I could only really think of six. And this is what they are.

1) To identify the kind of information needs for which online procedures are the most appropriate kind of response.

2) To be proficient enough with the basic procedures of reference interviewing, search strategy organization and search output analysis to have confidence in one's ability to use online searching as a basic resource of professional librarianship.

3) To know how to discover the repertory of available databases for any subject field, and to understand the principles of choosing from rival databases for a given information request in that subject field.

4) To be familiar with the principal types of the databases in current general usage and to be acquainted with the names and noteworthy features of some representative specimens of each type.

5) To enough about the properties of databases in general to be able to examine the documentation for an unfamiliar database in order to establish its scope, character, indexing practices, editorial policy and special features. Then to be able to use the evidence of such an examination to conduct a well organized introductory online reconnaissance of that database.

6) To be introduced to the methods for acquiring, staffing, promoting, budgeting and monitoring a library online search service.

This is a rather homely, conservative and unglamorous list of objectives. Any of us could think of more challenging and dramatic expectations that we could hold for professional searchers, but it's my view at this point in my teaching experience that these six objectives represent a sound basis for a student's entry into the world of professional searching. The interesting thing about this list is its ring of familiarity: these are just the basic techniques of good professional reference service. With a word or two changed here and there, these expectations would apply equally as well to professional practice with traditional print forms of bibliographies and indexing services.

Well, it that's the case, what are we all doing here? The objectives of the training are just the same ones that they have always been - so why bother with all the apparatus and specialized techniques? The outcome of all this, if it is done successfully, will just be the same as the completion of any sound training program in professional bibliographic services.

The thing which I believe is new and important about online training is that the new technology and it collateral resources provide us with the most convenient tool for the efficient and uniform cultivation of these skills that we have ever had. The introduction of hands-on experience enables our students to obtain an immediate and objective record of the consequences of their judgment. This in turn implies that much more experience can now be provided for the same amount of learning time. And this enables us to provide the opportunity for greater understanding to our students.

We have always taught the fundamental reference technique of mapping an information request into the repertory of library resources and using the indexes as structural features of these resources to locate the most likely positions of the desired information among these resources. But for the first time, the student need not be dependent upon the instructor's particular experience or intuition for an assessment of their efforts. They can go online with their strategy and get an unbiased response which, whatever its limitations or crudities, has the virtue of providing uniform information for both themselves and their teachers.

The experience of teaching with a resource which provides a frame of reference and a standard of comparison that is independent of both our students and ourselves, has given us the richest body of conveniently and continuously available empirical data that library education has ever had. We are, thus, all of us learning about problems of our craft at a much faster rate than we have ever done before, and this in turn, is driving up our expectations at a comparably increasing rate.

As a simple and well known example, consider the topic of indexing consistency and semantic noise. We have all taught for many years about the barriers that linguistic variety creates for the information seeker, and we pray that this is one of the things that our graduates will be sophisticated and sensitive about as they go out into the world to practice their craft. In traditional teaching, the standard approach to this subject was to assign readings, invite discussions and to introduce some very carefully staged examples to illustrate the difficulty and ubiquity of these phenomena. But with online searching the issue emerges in much sharper relief, because the evidence of semantic noise and its proclivity for bibliogrpahic mischief emerges, not from our presentations, but from the student's own searches - very often on topics of their own choosing. But the impact of this experience is stronger yet, because, instead of simply saying this is a fact of professional life and you have to be aware of it, we can now say you have just been confronted with this online, now do something about it right now. Analyze the problem, quickly, and make a field decision, quickly, and then witness an immediate display of the consequences of your decision. We are now able to provide rich, varied and continuous experience in the practice of professional judgment, and furthermore, we are providing this in an environment that can supply individualized feedback and control information.

There is perhaps a pale analogy between this situation and the revolution in the teaching of applied statistics that has taken place in the last ten years. In the

days when I took my statistics, most of my study time was taken up with performing calculations. Instructors would present us with a bunch of figures and some formulas and we sat down with desk calculators or slide rules and performed a lot of arithmetic in order to calculate a regression coefficient or a confidence interval estimate. But after BMD and SPSS came along, students no longer had to devote so many hours doing arithmetic drudgery, and time was freed for the study of more significant issues, such as the interpretation of density distributions or the significance of assumptions underlying the application of linear models or random sampling. Instructors were thus able to bring students to higher states of statistical sophistication for the same amount of classroom contact time. In a similar manner, the new technology has enabled us to focus to an extent that has hitherto been impractical on the more mature issues of analyzing bibliographic and indexing evidence in order to make astute choices about the selection and delivery of a response to our users.

But this is only one of the more obvious examples in which online technology has affected the depth of training that we can provide. Many perennial questions of applied librarianship and information science, such as coverage and overlap of secondary services, citation analysis, and bibliometrics are illuminated for students with a force and immediacy that simply has not been available to us before. Thus the depth of training that we are now in a position to provide is one that gives individual experience with many of the most professional aspects of library service in the context of individual experience with a structured, accessible, manipulatable representation of bibliographic practices and phenomena.

If this is not an overstatement, then it ought to mean that we should be turning out the best prepared, most insightful generation of reference librarians that our schools have ever produced. But his opportunity will come to very little unless we, as scholars and professional educators, take advantage of it and use our skills and creativity to develop learning experiences and pedagogical techniques that harness this technology to bring these issues to the students' awareness as a living and substantial field of endeavor that is worthy of the energy and attention of intelligent people. And, this, I think, is where the professional educator approaches training with a different emphasis than the database producers or the search services. Those people concentrate their educational efforts on helping their customers to know enough about the conventions of their systems to be able to use their products properly. In my opinion this is very worthwhile and just what these organizations ought to be doing, and I do not think that it is the business of the library schools to replicate the experiences of the vendor training sessions. We use many similar materials, cover some of the same topics, have compatible goals and share insights and problems. But the academic educator is concerned with the online experience in the service of providing students with a body of intellectual skills and conceptual frameworks that will prepare them to be confident and proficient professionals, whose careers will extend into the next century, and who must be prepared to deal with systems of the future as well as those today. And the online environment provides us with the most powerful technology we have ever had for the reification of the abiding concerns of library service.

8. INFORMATION SEARCH TACTICS

by Marcia J. Bates, University of Washington

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N.B. A more detailed presentation of this material is scheduled for publication in the Journal of the American Society for Information Science.

TABLE 1: INFORMATION SEARCH TACTICS

MONITORING TACTICS	Keeping the search on track and efficient
CHECK	Review the original request and compare to the current search topic. Are you still answering it?
WEIGH	On-going cost-benefit assessment. Anything likely to be more productive for the effort?
CORRECT	Spelling and factual errors can slip easily into your thinking. Watch for and correct.
RECORD	Keep track of desirable trails not followed up or uncompleted.
THINKING TACTICS	How to think about the search
THINK	Think before acting. On all but the simplest searches, even 15-30 seconds of forethought can save much effort.
MEDITATE	Develop the skill of achieving quickly a mind state in which thinking and intuitive capacities work together in solving search problems.
PATTERN	Experience with a type of question leads to an habitual pattern of search. Evaluate the pattern occasionally to see if it is most efficient.
BREAK	Habitual search patterns, while usually efficient, may blind you in novel situations. Break the pattern when necessary.
PERSPECT	Get a different perspective--really different. How would a child see it? A person in a different discipline? Can you look for its opposite? Think "laterally".
REFRAME	Do not automatically accept the client's way of structuring the question. Reformulation may take you half way to the solution.
RESCUE	Before abandoning an unproductive approach, check for productive aspects still untried.
LOCATE	Physical location is a powerful influence in all aspects of search thinking and behavior. Learn to overcome it when it is an obstacle, and to use it when it can help you. Be aware of implicit "region of search" and change it when necessary. Notice influence of proximity on decision to use sources.

GUIDING TACTICS	Tactics that are almost always helpful to use where applicable.
SELECT	You may work on a subproblem instead of the whole thing. Even when working on the whole problem, e.g., online search formulation of a complete request, tactics (especially term tactics) may be applied to just part of the problem. Think of the problem as segmentable.
SPECIFY	Search on terms that are as specific as what is wanted. Almost all indexing and classification systems require specificity in input and therefore in retrieval.
SURVEY	Do not go for closure too soon. At each point of search, whether selecting approach, resource, or term, survey available options before selecting.
CUT	Take the option with the most cutting power, the one that eliminates the most certainly-irrelevant information.
CLUE	The information gained in the process of the search not only answers the question, but also affects the question itself. Use clues produced in the search process to provide information to clarify and even reformulate the question.
SCAFFOLD	Scaffolding helps in constructing a building. When the building is finished, the scaffolding is torn down, but the building could not have been constructed without it. In information searching, if the direct path is unproductive, construct an auxiliary chain of files through which to reach the answer.
MISUSE	Almost all reference sources can be used productively for some other purpose than intended. Think about <u>all</u> the information that is in the source, not just about the intended uses of the source.
CLEAVE	Binary search principle.

CHANGE TACTICS	New directions to try with a lagging search
FOCUS	Look at the problem more narrowly, specifically. Sometimes looking hard at a detail and resolving the confusion surrounding it may clarify the whole search.
DILATE	Step back and look at the problem more broadly. Move from one aspect of the problem to the whole problem or from a specific to a general viewpoint, or both.
SKIP	If you have divided the question into parts and have been working on one part, move now to another part.
BEND	Try something different, another source, a different term.
TURN	Try something really different. Move to another medium, another information facility. Tackle the problem from a completely different angle. Make a dramatically different assumption about an ambiguous part of the request.
WANDER	When completely stumped, rely on serendipity to give you ideas or even the answer. Wander among your resources, randomly sample.
STOP	If all else fails, stop the search. Go away, do something else, forget about it for a while. When you come back to it you may have fresh ideas.
TERM TACTICS	Tactics related to entry or search terms of all kinds (subject, author, etc.) used when interfacing with information store, whether traditional or modern, manual or online.
SUPER	Move upward hierarchically, to a broader (superordinate) term. You may be assisted by pointers in a thesaurus or may have to rely on your own knowledge to devise the term.
SUB	Move downward hierarchically, to a more specific (subordinate) term.
RELATE	Move sideways hierarchically, to a coordinate term.
EXHAUST	Where only some of the elements of the request have been included in the search formulation, expand to include more, or all, elements in the statement.
REDUCE	Where all or many of the elements of the request have been included in the search formulation, reduce so as to include fewer elements.

TERM TACTICS, cont.

PARALLEL	Expand search to include synonyms, quasi-synonyms, or otherwise conceptually parallel terms
PINPOINT	Make search formulation more precise by reducing number of parallel terms, retaining the more perfectly descriptive terms
BLOCK	Reject items containing, or indexed by, certain term(s), even if it means losing some document sections of relevance.
NEIGHBOR	All indexing and classification systems group some things and separate others. Expand search by looking at neighboring terms, whether proximate alphabetically, conceptually, or otherwise.
TRAIL	Follow a trail through the file structure. Follow cross references, find alternative terms in catalog card tracings or abstract descriptor lists, follow up references at ends of documents.
FIX	Try alternative affixes, whether prefixes, suffixes, or infixes. Several may be done at once through "truncation" routines.
REVERSE	In any system where terms may contain more than one word, word order may make a difference in retrieval success. Reverse or rearrange word in term in all reasonable orders.

9. PLANNING THE EDUCATIONAL PROGRAM

9.1 SELECTING AND ESTIMATING EQUIPMENT & RESOURCES

adapted from notes by Charles P. Bourne

I. INTRODUCTION

A. This discussion assumes that equipment will be used for:

* online practice with small groups (e.g. intensive personal training)
* demonstration to large groups (e.g. one-time show & tell)

B. The school should have its own equipment.

You shouldn't have to take a class over to the library to demonstrate a terminal. To do so would be a continuing imposition, has severe scheduling, facility, payment and other administrative problems.

II. EQUIPMENT

A. What Kind?

1. CRT vs. Printer

PRO CRT: cheaper equipment, no supplies cost, can usually operate at faster speeds than printers, representative of equipment in operational use.

CON CRT: students need hard copy to review and reinforce what took place, and for future notes. Homework exercises may require terminal printouts to be turned back in. Teacher debugging and problem solving of students' work requires hard copy.

2. Thermal vs. Impact Printer

PRO THERMAL: Thermal is quiet, portable and usually desktop size.

CON THERMAL: Impact gives cleaner; folding & non-curling, more parmanent copies; better print for illustrations or transparencies; lower supplies cost because you can use backside of old computer printouts.

3. Speed (30 vs. 120 char./sec.)

PRO 30: Most equipment in use today is 30 char./sec., terminals and communications equipment is cheaper, a greater variety of terminal equipment models are available, 120 char./sec. communication lines are generally less available.

PRO 120: May get slightly higher productivity or throughput rates at the terminal; can alter the search strategy by using more information - rich commands (e.g. EXPAND, TYPE)

Don't try to do anything below 30 char./sec. Leased lines (480 char./sec.) not justified for usual volume of classroom use.

4. Small Group vs. Large Group Instruction

Demonstrations given to Large groups ($\geq$ 10 people) can benefit by using one or more large TV monitors mounted high enough to be seen over the heads of others. This solves the problem of crowding around a single terminal. The TV monitors are usually based on large commercial B&W TV sets, modified to accept a coax cable input from the terminal.

Only a few terminals provide an output jack that can furnish a signal to drive the remote displays. The DIGI-LOG is one example of such a terminal unit.

5. General Purpose vs. Special Purpose

The ASCII-compatible terminals (TI, NCR, etc.) can access and work with any of the major online search services, including:

DIALOG	MEAN?
ORBIT	LEXIS?
BRS	NY TIMES?
MEDLINE	
DOE/RECON	

They can also access and work (but in a more limited way) with OCLC and BALLOTS.

OCLC and BALLOTS production work makes use of special terminal equipment with the expanded character sets and miniprograms in the terminals.

6. One Brand vs. Multiple Brands

There are scores of different models of terminals available and in use in operational settings. From an instructional viewpoint, it would be desirable to have the lab equipment with every terminal different, and have the student work with several different models.

7. Built-in MODEMS

It's much more convenient to have equipment with built-in MODEMS.

8. Costs

a. How Much Equipment?

1. Show and Tell Use Only.

If the equipment is only to be used for show and tell demonstrations to small or large groups, then a single terminal is usually adequate, and can be augmented with large TV monitors.

2. Training Students to be Operators

If the objective of the training is to train people to be self-sufficient terminal operators (searchers), then consequently more terminal time is required per student to furnish the practice and experience that is necessary. A total connect time of about 4 - 5 hours per student (based on experience with instruction for DIALOG, ORBIT, MEDLINE) seems to be the amount required to bring a person up to the novice searcher level. For a formal class or lab situation,

The amount of equipment then depends upon:

*total number of students in the class
*total calendar time span of the class (e.g. 6 - 12 weeks)
*total number of lab hours available during the course

In a ten week course on computer-based reference service, with eight lab hours per week, each terminal would be available for eighty terminal hours. Because of system or terminal down-time, student no-shows, or other scheduling problems, it's unlikely that any terminal will be utilized more than 80% of its potential capacity. Thus, you really only have about sixty-four terminal-hours available. With an estimated 4 - 5 hours per student, this means that a single terminal can only handle 13 - 16 students.

The only way to handle more students is to 1) increase the degree of parallelism (more terminals): or 2) increase the number of hours that each terminal is accessible (longer lab hours).

In classes at UCB, labs were operating with 4 - 5 terminals in operation simultaneously. This had the added volume of providing a setting where the students could share their problems and learning experience.

It is important to have sign-up sheets, exercise due dates, or other scheduling mechanisms to evenly distribute student demands on the equipment. Otherwise, there can be bunching at the end of the term, with some students unable to finish the exercises because of lack of access to the equipment.

b. Lease vs. Buy

PRO LEASE: Reduce impact of technical obsolescense or mistakes in selection, maintenance usually provided with lease (and you're more likely to make more maintenance calls than if you had to pay for it.)

PRO BUY: Take advantage of opportunity or windfall funds.

III. SUPPLIES

a. Thermal Printers

Special paper (very expensive: $6./large roll)

b. Inpact Printers

Fanfold paper (less expensive: but you can use old printouts)
Ribbons (can be expensive: $10./each?)

IV. PHONES

a. Modems

It's much less cumbersome (fewer boxes, fewer cables and power cords, more table space) if your terminal equipment includes an accoustic coupler.

b. Desk Sets

A desk set is needed for each terminal. For flexibility in room layout, it may be helpful to have long cords on each desk set.

c. Phone Lines

An active phone line is needed for each desk set when the labs are in operation. However, if the labs do not run all year, consideration should be given to discontinuing or disconnecting most of the phones during the quiet terms. This depends on local service charges, and varies from one region to another.

d. Costs

The total local phone bill (installation, connect time) can be a considerable part of the lab costs.

The network (TYMNET, TELENET) costs may also be a part of the lab costs. However, some of the formal classroom instruction agreements of the search service provide free network connections.

DIALOG (TELENET free)
ORBIT (TELENET free)
BRS (TELENET free)

V. STAFF

It is assumed that a faculty member will be responsible for teaching the formal part of a computer - based reference course, and for designing the lab activities. However, there may still be a need for a lab assistant to actually supervise and run the lab, and correct lab homework exercises. This could be the same faculty member but it could be a person with less formal training or experience (i.e., a graduate student).

UCB experience found it very helpful to have a lab assistant in attendance during all lab hours, and also available on scheduled office hours for student consultation. It seems to require about one lab assistant in attendance for each 3 - 4 terminals in operation, at least for the first few lab sessions, in order to provide a good institutional setting, and to make good use of the equipment.

Some schools have run their labs unattended (self-service).

VI. BUDGET

On a per student basis, this is probably the most expensive lab activity on campus (other than linear accelerators or large telescopes). As such, it raises a lot of problems.

For show and tell (consciousness-raising) activities, the costs are relatively modest. For searcher training, it is on the order of $60 - $80 per student.

9.2 COSTS FOR COMPUTER-BASED REFERENCE SERVICE COURSE

Adapted from notes by

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I. BASIC COSTS

A. Online time (ca. $60.00 per student)

Summer 1977 course offering 222 with DIALOG Lab Workbook:
58 students @ $3517.69 for 233.75 hours
Per student = $60.65 for 4.03 hours (BASED ON ACTUAL BILL FROM LOCKHEED)

This was the first time DIALOG was used with the cost reported online. Students were asked to add up all costs--we checked too. The student self-reported costs averaged out to $60.90! Pretty close. Cost for "down times" had to be estimated when not on the printout. (*Winter 1977 course with 35 students and same exercises: student self-requested costs = $59.59 average per student.)

B. Paper Supplies (ca. $1.20 per student)

Rolls of TI paper = $5.25 per roll (purchased in cases of 12 for $63.00) For the Winter Quarter class of 35 students, we changed 4 rolls of TI paper. This is for three TI terminals. The DecWriters can use used paper from the Computer Center or new paper at ca. $25.00 per case of 32000 sheets.

Per student cost if only TI terminals are used would be about $1.20. This is probably a little high as the terminals were also used on week for BALLOTS hands-on and intermittently by students for UNIX.

C. Telephone (depends on proximity to TELENET or TYMNET node)

Telephone costs for us are simply the basic $9.50 monthly fee. (Probably less now with ATSS)

Both TELENET and TYMNET are within local range and as they are included in the instructional rate of the search services, the cost isn't overbearing.

II. OPTIONAL COSTS

A. Demonstration time with other systems

BRS $12 or $14/hr. (instructional rate for library schools, includes telecommunications)

ORBIT $15/hr. (instructional rate, includes telecommunications)

INFORMATION BANK $90/hr. (sometimes free if ask sales rep to demonstrate)

MEDLINE $7 hr. (if available on local campus)

B. Preparation of online exercises

If one doesn't use one of the Lab Workbooks, costs of testing exercises need to be considered. Also costs of xeroxing the same. As an instructor, I think this is just too time-consuming and costly--use of a ready-made lab workbook is preferred.

C. Online searching aids

Costs vary:
- search service manuals = $10.00 to $50.00 per search service
- database search guides = $5.00 to $100.00 per guide
- thesauri = $10.00 to $90.00 per thesaurus ($450.00 for INFOBANK thesaurus)
- word frequency lists = $30.00 (for CHEM ABST) to $850.00 (for DIALIST)

Rough estimates:
- $1000 to $2000 to acquire basic aids for start-up, if selective of databases and services
- $500 annual to keep up (if comprehensive). See attached actual cost for UCB September 1977 to March 1978 (7 months).

III. SCHEDULING

1. Schedule ca. 6 hours per student to allow for completion of 4 hours online time. This allows for "down times," late arrivals, talk with instructor, lab assistant, etc. before going online.

2. Schedule times in 45 minute blocks. We schedule 2 exercises per session over six sessions to complete the DIALOG Lab Workbook. (See attached schedule)

3. Need 1 lab assistant per 3-4 terminals during the first 2 weeks. After the third week, the lab assistant can handle nearly all of the students alone (i.e. 6 terminals in our case).

4. Need ca. 20 hours per week for a lab assistant for a class of 35 students or more. Duties: (1) ca. 8 hours per week to handle labs, (2) ca. 5 hours per week consultant with students in pre-lab preparation, (3) ca. 7 hours per week to go over office homework, write comments, record times, costs, etc.

UCB BUDGET ALLOCATION FOR 222

UCB has budgeted $4800 for online time (called "external computer services") for all offerings of 222 for 1977/78 academic year.

If using DIALOG, @ $60.00 per student = enough for 80 students, preferably 76 to allow for a buffer to test questions and to allow for problems.

PROBLEMS:

1. If limit the number of students who can take the course, must develop some guidelines as to who can take it and who cannot.

2. If accept more students than the budget will allow @ $60.00 per student must develop a means of reducing the cost per student of the online exercises in the DIALOG Lab Workbook.

   (a) Ask students to double-up in labs.
   I have not tried this, I forsee difficulties in scheduling, in personality power struggles, and possible extra time spent discussing problems while online. Jo Robinson, on the otherhand, thought it worked well for the UCB librarians that were trained in this way; she thought the discussions while online accented the training.

   (b) Reduce the cost of the online assignments in the DIALOG Lab Workbook.
   Parts of some of the online exercises may be eliminated if necessary (I would rather not though).
   Exercise 2--eliminate problem 8
   Exercise 3--eliminate problem 8
   Exercise 4--eliminate problem 6
   Exercise 8--eliminate problems 1 and 8
   (I have actually completely revised this using the new databases available on the instructional password: e.g. PSYCH ABST, SOC SCISearch, CAB, SCISearch, as well as ERIC, AGRICOLA, & NTIS).
   Exercise 9--may omit completely, but be sure to read page 9-1 before doing Exercise 10
   Exercise 10--limit to ONE database only or omit completely.
   (If there is a choice of omitting either Ex. 9 or Ex. 10, I would opt. for leaving out 9. The sense of self-satisfaction that comes with finishing a real search on #10 is very rewarding).

March 6, 1978

ONLINE User Aids Purchased since September 1977

ABI/INFORM User Guide	$27.50
ASM. Thesaurus of Metallurgical Terms	30.00
A Brief Guide to DIALOG Searching	10.00
CAB Abstracts on DIALOG	15.00
Daniel & Mills. A Classification of Library and Information Science (LISA)	?
EIS Information Retrieval User's Manual	15.00
ENERGYLINE User's Manual	25.00
GEOREF Thesaurus & Guide to Indexing	35.00
Guide to DIALOG--Databases Vol I & II	50.00
LLBA User's Manual	17.50
A Reference Guide to the NTIS Bibliographic data file	6.50
NTIS Subject Classification (Past & Present)	6.00
NLM/MESH - Annotated Alphabetic List, 1978	19.00
NLM/MESH - Tree Structures, 1978	13.25
NLM/MESH - Tree Annotations, 1978	6.50
SDC User Aids: Supplements for new databases: ACCOUNTANTS, FSTA, LISA, MGMT, PATENTS, new CHEMCON @ $5.00 each	30.00
Sociological Abstracts User's Manual	25.00
Thesaurus of Psychological Index Terms, 2nd edition	8.00
TOTAL	$339.00

PLUS: DIALIST @ either $550.00 for four sections of the multiple postings edition
or $850.00 for four sections of full vocabulary edition.

(Actually, we have kept the 1975 full vocabulary edition, but someone starting out would have to make a purchase of a new one. Using the DIALOG Lab Workbook encourages use of the full vocabulary edition (not explicitly) for comparison of online EXPAND analysis of DE, ID, etc.)

9.3 CONSIDERATIONS IN PLANNING AN ONLINE INSTRUCTIONAL PROGRAM

Adapted from notes by Charles P. Bourne

I. STAFF

A. Regular vs. Adjunct Faculty

This subject area is so central to the information field that there should be resident faculty expertise in this area. Particularly if post-Masters programs are included. Outside part-timers can be used as a temporary expediency - but only that.

The transference of this technology to other faculty members will be facilitated with a resident faculty member rather than a commuting (drop-in) faculty member.

B. How Many?

One full-time expert is sufficient to start most programs in this area.

II. PLACE IN THE CURRICULUM

A. Separate Computer-based Reference Service Course vs. Integration into Other Cours

There is clearly sufficient content to fill one or more courses devoted to the subject of computer-based reference services.

But the choice may be made by default on the basis of available and qualified faculty members, and available budget and facilities.

The specialty course has the advantages of:

1. In-depth professional training of interest to many students.
2. Recognizable body of knowledge displayed on student transcripts and resumes -- presently valuable in job hunting.

The disadvantages of a specialty course are:

1. the school will probably end up spending more money in this subject area
2. it may generate new staffing problems (probably need to find a new faculty member if the subject is to be treated in depth)

The application questionnaire from the Workshop applicants here showed about a 50-50 split on this point.

B. Competition With Other Departments

A specialty course probably wouldn't have any problem or conflict with other departments that give other computer courses.

III. SOURCE OF FUNDING

Staff costs, and the usual costs associated with any course would likely be picked up by the library school. However, some of the other direct costs have sometimes been picked up by other organizations.

For example:

Type of Resource	Treatment
Terminal equipment and supplies	UCB: purchased with year-end windfall money made available by the Chancellor upon application/proposal by the library school.
SDI profile runs for students	UCB: provided free by UC/CIS as part of long term promotional effort.
Online connect time for labs	UCB: provided free by Lockheed and SDC in return for preparation and testing of lab workbooks and exercises. Syracuse: provided free by BRS in return for preparation & testing of lab workbooks and exercises. Other schools: paid by Campus Computer Center as part of budget for outside computer services. Case Western: MELEARN/MEDLINE provided as part of grant for project in health sciences instruction.

IV. LEAD TIME

Not much different than other courses. The answer is related to practice of permanent vs. adjunct faculty, integrated vs. single course. But be careful about facilities and equipment.

V. SELLING TO MANAGEMENT

Popular demand may require the school to provide this instruction. In some cases, however, it might be necessary to prepare a proposal to the Dean and the Curriculum Committee to provide such a course.

VI. FACILITIES, EQUIPMENT, SERVICES

A. Separate Lab Area vs. Equipment Distributed Around the School

There are good arguments for having the terminal equipment grouped together into one lab area:

1. Security control
2. More effective instruction and supervision of use of phones and terminals
3. Can assemble one reference collection of manuals and search aids to be in close proximity to all terminals
4. Less interference with other activities (e.g. if terminals are located in faculty offices)

Thus the course planner needs to arrange for lab space.

B. Equipment

Arrangements must be made for enough terminals to be available, and maintained in working order (i.e. maintenance agreements) for the classes. This may take a budgeting and procurement lead time.

C. Reference Material

Search system manuals, database guides, search support tools (e.g. thesauri, word frequency lists) must be available for instruction and reference purposes. This can cost several hundreds of dollars, and require months of lead time to acquire. (None of the DIALOG material is copyrighted, and you are free to make as many copies as you wish.)

Number of copies needed? Rule of thumb: 1 search service manual and database guide on short-term reserve reading basis for every 4-5 students.

D. Services

It may take several months to arrange a search service contract through your purchasing department.

It may take a week or more to change your passwords at the end of a quarter, and this is a suggested practice for your protection.

10. NOTES FOR POSITION PAPERS

These lists of suggested issues were distributed to the participants before the final sessions of the Institute which were devoted to discussions leading to the drafting of two Position Papers. These Position Papers were submitted to the ERIC Clearing House on Information Resources for general dissemination. Since they are available separately as ERIC documents, they have not been included here.

The Position Papers have been issued by the ERIC clearinghouse, with the following document numbers:

ED 157 553 PROPOSED STANDARDS FOR EDUCATION IN ONLINE SEARCHING IN THE PROFESSIONAL LIBRARIANSHIP CURRICULUM. POSITION PAPER NO. 1.

ED 163 941 ON THE RELATIONASHIP BETWEEN LIBRARY SCHOOLS, SEARCH SERVICE VENDORS, AND DATABASE PRODUCERS. POSITION PAPER NO. 2.

Position Paper No. 1

STANDARDS FOR EDUCATION IN ONLINE SEARCHING IN THE PROFESSIONAL ONLINE CURRICULUM.

What are minimally acceptable or desirable levels or resource committment for a sound program?

What are minimal or desirable levels of student achievement?

What are the recommended qualifications for instructors of online support be?

What should standards for equipment, documentation and staff support be?

What knowledge and proficiency does the profession have a right to expect of our graduates?

How do we insure that professional education keeps up with changes in the state-of-the-art?

How should these standards be assessed in review or accreditation proceedings?

Postition Paper No. 2

THE RELATIONSHIP BETWEEN LIBRARY SCHOOLS, SEARCH SERVICE VENDORS AND DATABASE PRODUCERS.

What would be the most desirable features of this relationship?

What are the most valued aspects of the relationships that we have now?

What would be the best mechanism for continuous, productive communicatio between educators, producers and vendors?

What resources would we like to see developed? (For example: How badly do we need our ONTAP-like file for teaching crossfile searching? Who should develop it?)

What can library educators offer producers and vendors? (Examples: 1. Consulting for producers in preparing effective presentation techniques for their product demonstrations. 2. Writing reviews and refereeing workbooks. 3. Offering our classes for prepublication tryouts of tutorial materials.)

What can producers offer library educators, other than special rates?

How do we protect educational privileges, such as special rates? Or more generally, how do we nurture a cooperative good-faith relationship between educators, producers and vendors?

How do we provide for the sharing of tutorial materials, and the exchange of pedagogical experience and innovations? More generally, how do we provide for the continuing education of educators?